

FEBRUARY 1919 ~ No 157

Monthly

A Reference for Buyers

HITCHCOCK'S
**MACHINE
TOOL LIST**

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

Published by
A. H. HITCHCOCK
1220-1235 Caxton Building
Chicago

Type **A.S.** Adjustable Speed RELIANCE MOTORS

The "Any-Speed" Motor

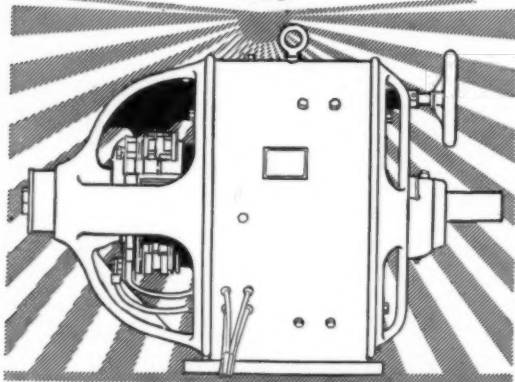
Type AS Reliance Motors run at any imaginable speed within their range. There are no steps nor jumps. You can get exactly the right speed to suit any job. This means a top-notch production rate on all kinds and sizes of work.

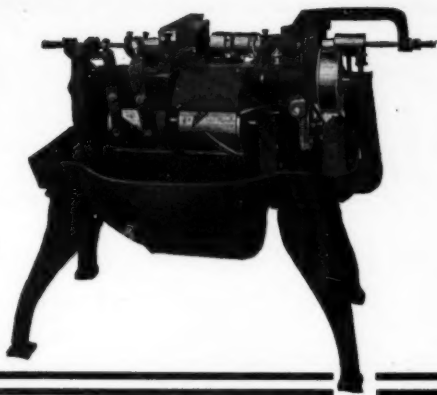
Get details in Bulletin 1014

Reliance Electric & Engineering Co.

1050 Ivanhoe Road, Cleveland, Ohio

Branch Offices:
New York, Philadelphia, Pittsburgh
Chicago





Built particularly for STUDS

The NAMCO Automatic Stud Threader, is specialized for rapid and accurate threading.

Feeding blanks from the magazine and extracting the threaded pieces are accomplished at the same time. Non-productive movements are further eliminated by using NAMCO Automatic Opening and Closing Dies.

All non-cutting movements are quick and positive. Idle time is reduced to the minimum, and one man takes care of three machines.

For the lowest cost per piece use NAMCO Stud Threaders. Let us prove it. Estimates from samples.

Capacities $\frac{1}{4}$ " to 1" inclusive.

THE NATIONAL ACME CO.
NEW ENGLAND PLANT **Cleveland, O.** CANADIAN SCREW PLANT
WINDSOR, VT. MONTREAL

Branch Offices:

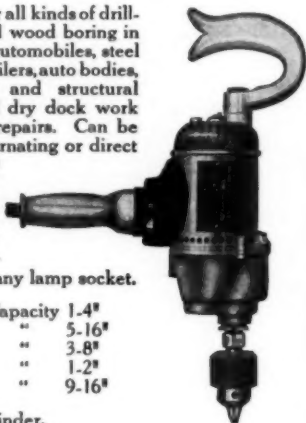
NEW YORK BOSTON CHICAGO DETROIT ATLANTA SAN FRANCISCO
WAREHOUSES—NEW YORK, CHICAGO With FOREIGN REPRESENTATIVES

Makers of Gridley Single and Multiple Spindle Automatics at Windsor, Vt., and Acme Automatics, Threading Dies and Screw Machine Products at Cleveland, Ohio

Thor Universal Electric Drills

Licensed Under Burke Universal Motor Patent

Indispensable for all kinds of drilling, reaming and wood boring in the building of automobiles, steel and wood cars, boilers, auto bodies, and in railroad and structural shops, ship and dry dock work and machinery repairs. Can be operated on alternating or direct current, 110 to 250 volts. Furnished with cord and suitable feed attachment ready for immediate use. Attach to any lamp socket.



000	Drilling Capacity	1-4"
00	"	5-16"
0	"	3-8"
01	"	1-2"
1	"	9-16"

No. 6 Electric Grinder.

Independent Pneumatic Tool Company

Chicago	New York	Pittsburgh	Cleveland
Detroit	San Francisco	Birmingham	Montreal

*Specify
B&S Cutters*



STANDARD
CUTTERS
IN MANY STYLES
AND SIZES

Special and
formed Cutters
singly and in
gangs to order

Send for
Cutter Catalog
27-S



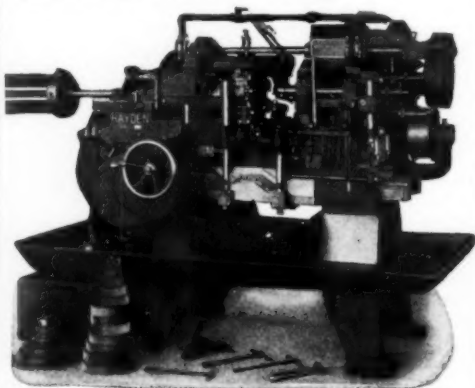
BROWN & SHARPE
CUTTERS

The cumulative result of fifty
years of experience in the extensive
use as well as the extensive
manufacture of milling cutters.

BROWN & SHARPE MFG. CO.,
PROVIDENCE, R.I., U.S.A.

Cheap production of screw machine work despite high wages

While America is paying the highest wages in the World, we compete successfully in the World's markets because Yankee ingenuity is unequalled in the production of labor-saving machinery, and because the American manufacturer is quick to adopt whatever saves labor, increases output or improves his product.



The Cincinnati Automatic

is a machine for the production of screw machine work which increases production and reduces the labor-cost of its product to a point that is almost negligible. Its 48 Superior Features, fully described in the Catalog, are a tribute to its designers and a source of both profit and economy to its users.

Write for the Catalog and look them over

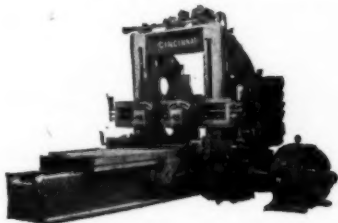
Cincinnati Automatic Machine Co.
Oakley, Cincinnati, Ohio

Cincinnati Reversible Motor Driven Planers

10 Cutting Speeds, 25 to 60 ft.

10 Return Speeds, 50 to 100 ft.

The right speeds for ALL your planing work will add to the output and save you money every day



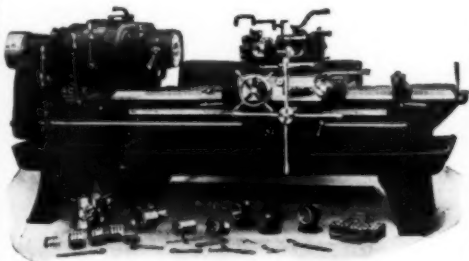
The power is applied in the simplest and most direct way. A variable speed reversible motor is coupled direct to the driving shaft. It does away with shifting belts and all variable speed devices, and furnishes a noiseless drive, a quick reverse and any speed the work requires. Any cutting or return speed is instantly available while the planer is in operation, without shock or sparking of the motor.

Cincinnati Motor-Driven Planers and our Patent Tu-Speeds are both made in many styles and sizes. Write today for detailed information, and consult with us freely about your planing problems, without cost or obligation on your part.

The Cincinnati Planer Co.
Cincinnati, Ohio, U. S. A.

The **Cincinnati-Acme** Flat
Turret Lathe

A Peace-Time Production Machine



3/4x36" Bar Capacity. 16" Chucking Capacity.

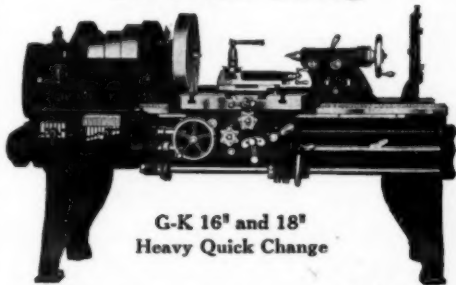
The need of the most capable, the most efficient, the most economical tools is even greater now than when the war was on, which should direct your attention to the Cincinnati Flat Turret, because of its exceptional capacity for the rapid and cheap machining of detail parts in quantities. Its adaptability to a wide range of work, its simplicity and ease of control, its unequalled rigidity and its exceptional economy of operation, commend it to manufacturers who are seeking to lower their manufacturing costs.

*May we show what it can do on your work
without cost or obligation?*

The Acme Machine Tool Co.
Cincinnati, Ohio, U. S. A.

G-K Engine Lathes

16" to 30" Swing



G-K 16" and 18"
Heavy Quick Change

All G-K Engine Lathes represent the highest type of construction. Our 16" and 18" Lathes are built with three styles of Headstock:

- Four step cone, single back gear.
- Three step cone, friction double back gear.
- Geared head, single pulley drive.

Our 20", 22", 24" and 30" Lathes are built in two styles:

- Three step cone, friction double back gear.
- Geared head, single pulley drive.

"G-K Betterments"

—is the name given to our Catalog, because it describes real improvements which insure greater power, rigidity, accuracy under heavy cuts, and convenience in operation—in other words, a maximum output on a satisfactory basis of cost.

Write for your copy of "G-K Betterments"

The Greaves-Klusman Tool Co.

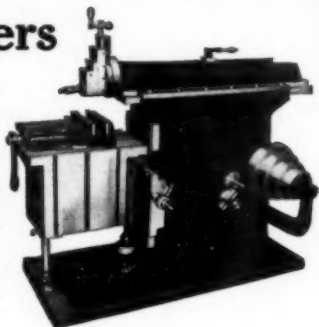
Cincinnati, Ohio, U. S. A.

Shapers

The best medium
priced Shaper on
the market.

Built in 16", 18",
and 24" sizes, all
back geared crank
machines.

A few for early
delivery.

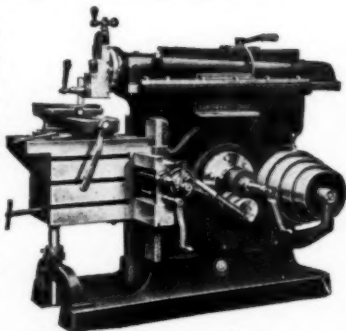


The Osborne & Sexton Mchy. Co.
Columbus, Ohio

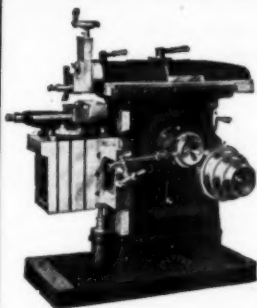
SHAPERS

12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

28" and 32"
Back Gear-
ed Crank,
Single Pul-
ley Drive.



The Smith & Mills Co. Station B,
Cincinnati, O., U.S.A.



Steptoe **Shapers** *and* **Millers**

are the product of seventy-three years of experience in the manufacture of

High Grade Machine Tools

Thousands of our machines in shops giving daily satisfaction are a recommendation for our product which should not be overlooked when buying shapers and milling machines.

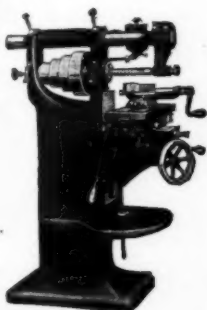
We will be glad to send catalogues on request

—The—

John Steptoe Co.

Stock Yards Station

Cincinnati, Ohio



For reducing stock to circular form by quick, powerful blows



The Etna Rotary Swager

For the quick and accurate pointing, tapering or reduction of stock to circular form by striking 3,000 or more powerful blows a minute with a pair of grooved dies.

When replacing power hammers, it has often multiplied production five to ten times.

Made in regular sizes to swage $\frac{1}{4}$ " to $4\frac{1}{2}$ " diameter. Any reasonable change in size made to suit.

Write for Catalog. It shows interesting production figures.

The Etna Manufacturing Co., TOLEDO, OHIO

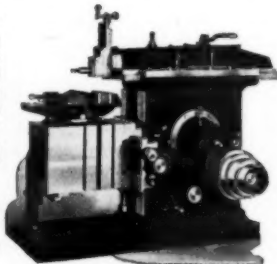
COLUMBIA HEAVY DUTY SHAPERS

16", 20", 24" and 28".

Column has V-shaped guides for rail—similar to milling machines. Rail is permanently gibbed; cannot sag away from column while being adjusted; one lever on operator's side locks rail instantly in position.

An exclusive Columbia feature.

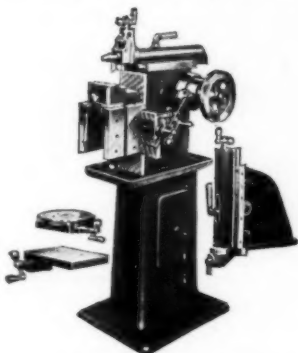
Your request will bring the others.



The Columbia Machine Tool Company
Hamilton, Ohio

Efficient, Accurate, Economical

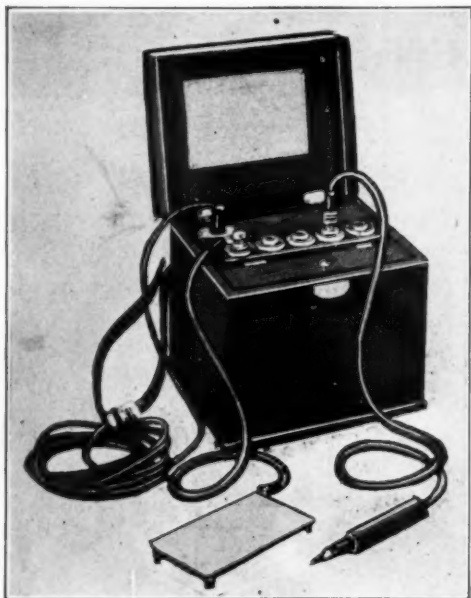
**Rhodes Horizontal & Vertical
Shaper and Slotter**



No matter what you have to do in shaping and slotting, if it comes within the capacity of the 7½" horizontal and 3½" vertical Rhodes, we can show you how and why it will save you money to use it instead of a larger machine. Mainly, of course, because you can do the work more easily and quickly, but this is not all. Drop us a line and let us place the facts before you.

Why not do it today—now?

Rhodes Mfg. Company
Hartford, Conn.



You Can Write Indelibly on Steel

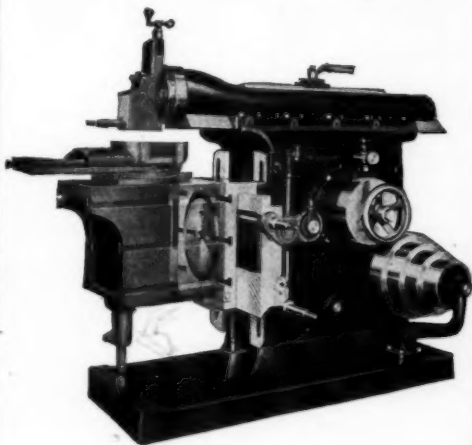
even when hardened, just as easy as with a pencil on paper, by means of

THE ELECTRO-STYLOGRAPH

Very useful for permanent marking of tools, gages, dies, metallurgical test specimens, etc.

THE ELECTRO-STYLOGRAPH CO.
2 EAST 24TH STREET, NEW YORK

Milwaukee Shapers



MILWAUKEE Back-Geared
Crank Shapers are built in
16-in., 20-in. and 24-in. sizes.

UNEXCELLED in Rigidity,
Accuracy, Power, Production
and Simplicity.

Milwaukee Shaper Co.

1144-1146-1148 Holton St., 518 Prairie St.,
Milwaukee, Wisconsin

Safety First

That Means Allen Set Screws



From $\frac{1}{4}$ to $1\frac{1}{2}$ ", any
length, point or thread

A projecting set screw is an open invitation to accident, loss of life or limb, and loss of money to the owner. It is a crime to permit it when Allen Set Screws, which do not project, which are absolutely safe, and which are 30 per cent stronger, are to be had for almost nothing. Don't let that shaft make another turn without them.

Samples free for testing

ALLEN MFG. CO., - Hartford, Conn.

Armstrong Drop Forged Wrenches

Superior Design and Quality



**All
Kinds**



**All
Sizes**

Catalog free



Armstrong Bros. Tool Co.

"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.

A CLEAR TRACK FOR THE STOCK

*This Job Complete in
2½ Minutes*

2 1/8
1 1/8
1 1/8

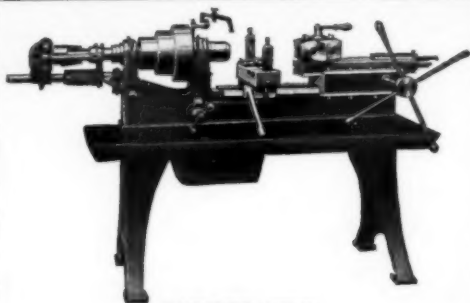
2 1/8
1 1/8
1 1/8

Malleable Iron

are **accurate** and **productive**. Fifteen years' of thoroughly tested service. A size for every class of manufacturing.

Catalog "H"—Its Free

BRAZIL, INDIANA, U.S.A.



MODEL "D"

Turret Lathes and Screw Machines

Now Ready for Delivery

**Designed for Rapid Manufacturing of
Parts Requiring Several Operations**

MADE IN FOUR SIZES:

- No. 2 { $1\frac{1}{8}$ " Wire Feed Capacity, Plain Head
 { $1\frac{3}{32}$ " Hole Through Spindle.
- No. 3 { $1\frac{5}{8}$ " Wire Feed Capacity, Plain Head
 { $1\frac{1}{8}$ " Hole Through Spindle.
- No. 4 { $1\frac{5}{8}$ " Wire Feed Capacity, Geared Head
 { $2\frac{1}{2}$ " Hole Through Spindle.
- No. 5 { $1\frac{5}{8}$ " Wire Feed Capacity, Geared Head
 { $2\frac{1}{2}$ " Hole Through Spindle.

**With or Without Power Feed to Turret Slide.
Mechanically Perfect and Fully Guaranteed.**

Manufactured By

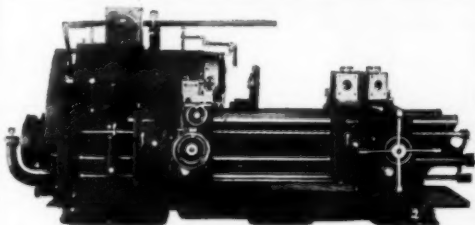
Smurr & Kamen Company

328-330 N. Albany Ave., Chicago, Ill.

STEINLE TURRET MACHINE CO.

MADISON, WISCONSIN

Originators of the Heavy Duty Full Swing Side Carriage Turret Lathe



Standard Steinle 24th Full Swing Side Carriage Turret Lathe with $6\frac{3}{4}$ " Hole through Spindle as Arranged with Motor Drive

The machine shown above is the superior of any heavy duty turret lathe on the market as a general purpose machine. It has exclusive features that are invaluable and permit of better tooling arrangements than can be applied to any other machine of this character, thereby greatly increasing efficiency in point of quality and quantity of production.

Manufacturers of tractors will find this Steinle 24th Full Swing Side Carriage Turret Lathe a great producer of such parts as cylinders, where same are cast singly, pistons, piston rings, fly wheels, gear blanks, sprockets, axle housings, differential cases, hubs, etc.

Many of the principal manufacturers of tractors, trucks, aviation motors, marine gas engines, and stationary engines are counted among our customers, and repeat orders from practically all have demonstrated the gratifying results obtained from the use of our machines.

On receipt of your drawings we shall be pleased to submit production estimates and full information.

The Reliable Sidney Lathes

Meet All Exacting Requirements

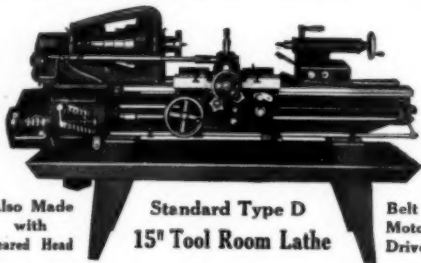


15", 17" and 19"; S. or D.B.G. ; Plain or Q. C. G. ; Beds 6' Up

You will find Sidneys efficient and accurate for all kinds of work in tool room and shop. Manufacturers always find them satisfactory. They are moderate in price, quality considered. Let us send you the full specifications.

THE SIDNEY TOOL CO., SIDNEY, OHIO

Crawford Lathes



Also Made
with
Geared Head

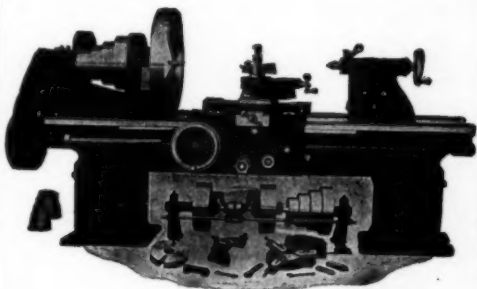
Standard Type D
15" Tool Room Lathe

Belt or
Motor
Drive

Made for a discriminating trade and to give satisfaction under the most exacting conditions.

Crawford Machine Tool Co., Inc.
21 Park Row, New York

South Bend Lathe



24 in.x10 ft. Screw Cutting Engine Lathe.

South Bend Lathes are made in six sizes—13", 15", 16", 18", 21" and 24" swing, with beds from 4' to 16' in length. Furnished with either straight or gap bed.

South Bend Lathes have been on the market thirteen years. Over 20,000 in use. Dealers in every large city.

Reasonable Price Lathes

Send for free Catalog illustrating and describing entire line

South Bend Lathe Works

Established 1906

South Bend, Ind.

East End

Monarch Lathes

give universal satisfaction to the user. They have been doing this for years, and this accounts for the ever increasing demand for **Monarch Lathes.** Built in all styles and with any attachments desired.

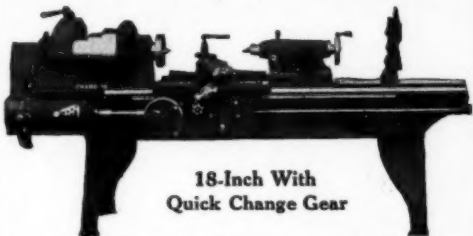
Sizes 10 to 30-inch Swing

*Sold by a leading Machinery Dealer
in every machinery center.*



The Monarch Machine Tool Co., Sidney, Ohio

Proofs Of the Practical "Chard" Super-Quality of the



18-Inch With
Quick Change Gear

Built with 16", 18", 20", 24" and 28" Swing

One proof lies in the study of its design and construction. A careful examination of the specifications, which we shall be glad to mail upon request, will be convincing to the practical mechanic.

Further proof lies in the verdict of users, to whom we shall be glad to refer you.

And we believe that in the superior design, careful construction and successful operation of the "Chard" in other plants you will find ample warrant for the final proof on your own work in your own shop, for which purpose we are willing to back it to the limit.

It's not a miracle—just a better lathe

Say the word and we'll send convincing literature

Chard Lathe Company

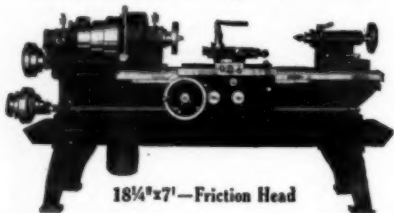
Newcastle, Ind.

DOMESTIC DISTRIBUTORS

THE F. O. STALLMAN SUPPLY CO., San Francisco, Cal.
VONNEGUT MACHINERY CO., Indianapolis, Ind.
ENGLISH & MILLER MACHINERY CO., Detroit, Mich.
OGDEN R. ADAMS, Rochester, N. Y.
THE W. M. PATTISON SUPPLY CO., Cleveland, Ohio.
J. S. MILLER MACHINERY CO., Pittsburgh, Pa.
MONARCH MACHINERY CO., Philadelphia, Pa.
DALE-BREWSTER CO., Chicago and New York.

Save \$150 to \$200 in First Cost

The Fulton Has No Expensive Extras



18 1/4' x 7'—Friction Head

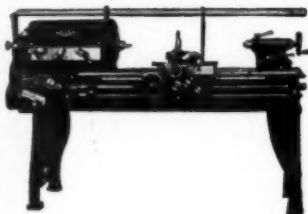
The demand for a simple, high power tool has been met by the Fulton heavy duty manufacturing lathe. It has no frills, but will do 75% of the work required in the average manufacturing plant.

Let us mail you the interesting specifications

Fulton Machine Tool Co., 1438 Bryan Pl.,
CHICAGO, ILL.

Power for Better Production

Filsmith Lathe Embodies New Features



**14" Swing
Q. C. Gear Box
And 12-Speed
Ball Bearing
Geared Head**

Has great power for its rated swing, is unusually sturdy for its weight, and can be depended on for the hardest grind. Send for details of this 20th century tool.

PHILIP SMITH MFG. CO., SIDNEY, O.

"THE SMALL LATHE FOR THE BIG JOB"

"DALTON SIX"

**METAL WORKING
LATHE**

Actual Swing 7 1/4 Inches

MODEL TYPE "B-4"

30 OR 36 INCH LENGTH OF BED



Standard Machine
Mounted with Standard
Type High Legs



Super Attachment Fixing
of the Machine



Standard Machine
Mounted with Cabinet
Type High Legs



Standard Bench Type



Standard Bench Machine
Mounted with
Motor Drive



Standard Machine Showing
Power Attachment with
Cabinet Type High Legs



Standard Machine, High
Legs, with Wheel and
Lower Type Tail Stock



Motor Driven Machine
with Cabinet High Leg
Mounting



**MANUFACTURED BY
DALTON MANUFACTURING CORPORATION
NEW YORK, U.S.A. CABLE ADDRESS "ALEDAL" NEW YORK**

COMPLETE BULLETINS SENT ON REQUEST

Draw-in and Thrust Chucks

for Tool Room Lathes and Screw Machines. Look for the name "Hardinge Brothers" and write us. And did you ever ask us to make those—

Screw Machine Collets

with regular or irregular holes? We are prepared to make good deliveries. Why not try us next time? Quantities never too small or too large to interest us.

When making inquiry, kindly refer to "Chuck Department"

Hardinge Brothers, Inc.
Chicago, Ill.

ATLAS 20" Heavy Engine Lathe



Quick Change, Double Back Geared
Made with 8, 10 and 12 ft. Beds, or
longer made to order. 29 and 24" Swing.

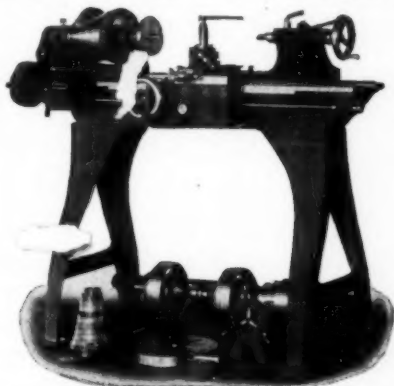
Atlas of old had a heavy burden on his shoulders, but he was built for it, just as the Atlas Lathe is built for taking heavy cuts with easy and accuracy.

Get acquainted with this efficient, powerful lathe

The Taylor Machine Co., Cleveland, Ohio

A Small, High Grade Lathe

The 11" Worcester Is a "Thoroughbred"



We specialize on 11", 13" and 16" sizes
Cone or geared head, pulley or motor drive

You will not have cause to regret the installation of a "Worcester" in your shop or tool room. Every lathe we sell is a superior tool, being the embodiment of our long experience and our constant endeavor to produce a lathe of 100% efficiency and top-notch wearing qualities.

It is complete in design and of the utmost simplicity. When you buy a "Worcester" you get it all—no extras to bother about later.

*If you want "the best of its kind" send
for the specifications of the "Worcester"*

Worcester Lathe Company
68 Prescott St., Worcester, Mass.

Many good keyseats
have

been milled with this

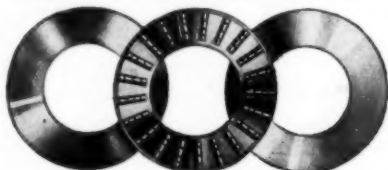
KEYSEATER

Do You Need One ?

*For Full Particulars
Write for Catalog O*

National Machine Tool Co.

2266 Spring Grove Ave., Cincinnati, O.



BEARINGS

LIGHT DUTY

HEAVY DUTY

ALL TYPES

MANY SIZES IN STOCK

THE GWILLIAM COMPANY

ENGINEERS

253 WEST 58th ST., (at Broadway), NEW YORK

Branch, 1314 Arch St., Philadelphia

Modern Methods for Quick Work



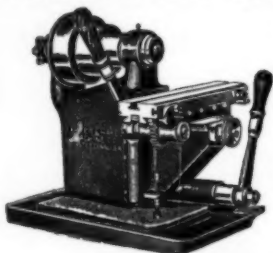
A DAVIS KEYSEATER

Motor driven,
will save you
valuable space
as well as in-
crease your pro-
duction. It is
an investment
you can't afford
to overlook.

Write for Circular

DAVIS MACHINE TOOL CO., Inc.
ROCHESTER, N. Y., U. S. A.

Just The Machine



for those light cuts on details for Fire-arms, Sewing Machines, Typewriters, Bicycles, Electrical work, and a thousand and one other details used in the manufacture of the various products of the manufacturing world.

Send for descriptive circular

The Carter & Hakes Machine Co.
West Winsted, Conn., U. S. A.

AGENTS—for New England and New York, Hill, Clarke & Co.
WESTERN AGENTS—Marshall & Huschart Machinery Co.,
Chicago, St. Louis, Indianapolis.



Burke's No. 3 Bench Millers Are Seasoned Tools

Our system of tests insures accuracy, and our methods of construction make it permanent. Frames and parts are carried 6 to 8 months, after work begins on them, before the completed tools receive our final O. K., and all parts are finished and fitted with exceptional care.

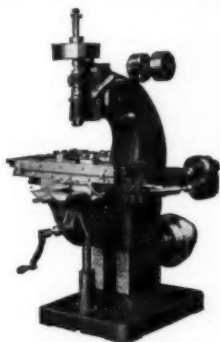
Longitudinal feed, 6 in.;
transverse feed, $3\frac{1}{2}$ in.; vertical
motion of knee, $8\frac{1}{2}$ in.; table
surface, $3\frac{1}{2} \times 12$ inch.

Write for Catalog, which also shows larger and smaller sizes.

The Burke Machine Tool Co.
Conneaut, Ohio

BECKER

BELT DRIVEN MILLERS



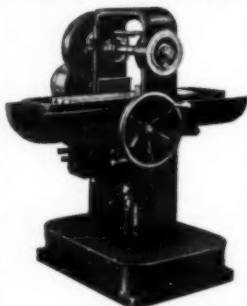
The Machines that give the Smooth Finish

Becker Belt Driven Millers have a wide range for work such as light engraving, die sinking, profiling and milling small, medium-sized and large parts with accuracy and speed.

*Our Engineers will be glad to
give you estimates on your work*

Becker Milling Machine Co.
Hyde Park, Mass.

None Better For 1919



Briggs High Duty Milling Machine

A very modern, up-to-date machine of unique design, without equal for form and gang milling of steel parts for automobiles, guns, etc., etc.

Its great economy makes it of unusual value in tool room and machine shop. Takes wide cuts in hard steel to the full power of double belt.

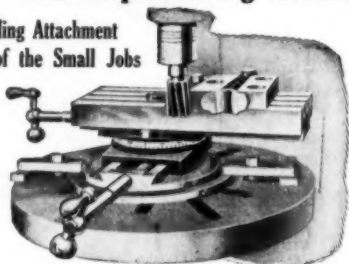
Write for details of this successful machine

GOOLEY & EDLUND, Inc., Cortland, N. Y.

Relieves and Replaces Big Millers

**Davis Milling Attachment
Does 90% of the Small Jobs**

**Converts
any Drill
Press from
14 to 42-in.
swing in
2 Minutes**



Relieves your large millers, comes in handy spotting castings, milling ends of bosses, etc., and does 90% of the lighter jobs as well as a \$1,000 machine; cuts keyseats perfectly. We also have low factory prices on our cylinder reamer for reboring the Ford car, and on our reliable air compressor. Write for details.

Hinckley Machine Works, HINCKLEY, ILL.

"Whitney" Hand Miller

THOUSANDS IN USE



Specially handy for the Tool Room. A wide variety of cuts can be quickly set up and completed without any sacrifice of the accuracy so essential in Tool Room work.

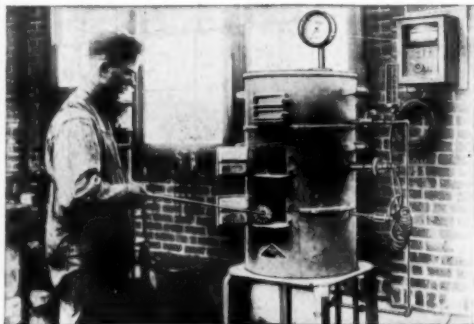
Prompt Deliveries

But they are going fast. Don't wait! Send your order in at once.

The Whitney Mfg. Co., - Hartford, Conn.

Chains—Keys—Hand Milling Machines

**High-speed and carbon steel tools
treated with greater certainty in
one unit at a third the fuel cost**



The "TRIAD"—Three Furnaces in One

It saves in cost of installation, in fuel, in floor space and in spoiled tools.

One oil or gas burner heats all three compartments quickly to desired temperatures for pre-heating, high-heating and drawing the temper.

It gives the best results. The pieces being treated are transferred from the intermediate to the lower compartment through a non-oxidizing atmosphere. This removes the danger of pitting or scaling from oxidation so often caused by passing them from one furnace to another through free air.

A good thing to get next to. Write for full details.

W. R. BENNETT CO., Elmwood, Conn.

**No. 1 Bickett Style C
Vertical Milling Machine**

Back Geared, Power Feed



Longitudinal Feed, 16' - Transverse Feed, 5' - Vertical Feed, 8'.

Ball bearing throughout.

Will make substantial cut with 2" end mill.

Guaranteed to run at as high a speed as
any end mill will stand on *any kind* of material.

A money maker for the die maker.

Write for Circular "V"

Bickett Machine & Mfg. Co.
1110 Richmond St., Cincinnati, O.



Punches of Quality

Pay Dividends

You value a punch for the work it will do, and it is worth a good deal to know when you start a punch on a job that it is going through with it without delay or trouble.

T. H. L. Punches Are That Kind

If you could just see the experience, the study, the care that go into them, you would know why our customers say there are no others quite as good.

Why don't you try them?

T. H. Lewthwaite Machine Co.
415 East 31st St., New York City

It Takes But a Second



To Make a Perfect Rivet

By a "perfect rivet" we mean one with a perfectly shaped head of any style desired, that is tight or loose as wanted, and that is not bent in the shank or upset in the slightest degree.

Perfect rivets, made with a Grant Noiseless Riveter, are produced more rapidly, and at less cost than they can be made in any other way giving an equally accurate product.

If you do any sort of riveting, investigate the Grant; information at your service free.

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.

Riveting Revolutionized

"The Hammer with the human stroke"

Heads Rivets Cold



Heads 'em tight or loose, flush, countersunk, or finishes heads any shape desired at the rate of:—

A rivet a second, sizes up to 3-16 in.

A rivet in two seconds, sizes 1-4 to 3-8 in.

A rivet in three seconds, size 7-16 to 5-8 in.

Built in Eight Sizes

Send us sample assembly parts with rivets or sketch of your work, and let US shoulder your riveting problems.

Send for the High Speed Hammer Book

Department 13

The High Speed Hammer Co., Inc.
Rochester, New York



Electric Blue Printing Machines

Write for Catalogue B-3

Buckeye Engine Co.
Salem, Ohio



Blueprints The Wickes

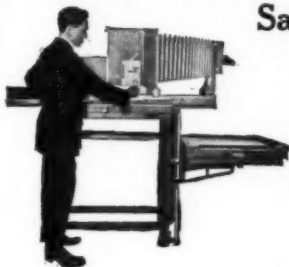
Continuous Electric.
Sells at **half the price.** Uses **half the current** of others.
Perfect prints up to 48" in width and of unlimited length.

Wickes Bros., Water St., Saginaw, Mich.

The PHOTOSTAT—A Thrift

(Reg. U. S. Pat. Off.)

Saves Labor



This Cut
Shows a
PHOTOSTAT
in Operation

The PHOTOSTAT, which is manufactured by the Eastman Kodak Company, is a combined camera and copying machine. The copy is made directly onto a roll of paper. No intermediate glass plate, or film, or other negative, has to be made. By copying thus directly onto the paper, the copy is made very quickly and at a low cost. Also the copy is a facsimile of the original, so that there can be no mistake in it. The print is developed and fixed right in the apparatus itself; this part of the process, as well as the focusing and exposing, all being mechanical. The print is then removed to a tank of running water, in which it is washed free from chemicals. Finally the print is taken from the water and dried and is then ready for use. The whole process is a rapid one, the average speed per print being from one to five minutes.

The PHOTOSTAT is used in Factories, Machine Shops and Offices, to copy at actual size, in reduction, or in enlargement:

Pencil Drawings, Blue Prints, Tracings, Sketches, Shop Orders, Illustrations for Salesmen, Cuts and Drawings for Patent Work, Cuts and Lay Outs for Advertising, Reports, Cost Sheets, Vouchers, Accountings, Contracts, Testimonial Letters.

*A small book giving detailed description
will be sent to you upon request to the*

Commercial Camera Company

343 State Street, Rochester, New York

325 Grosvenor Bldg., Providence, R. I.

Alfred Herbert, Ltd., Agents, Coventry, England.

Partridge Light Punch Press

For making novelties from sheet metal, including such operations as stamping, blanking, piercing, bending, forming, perforating, embossing, shearing and wire cutting. Has exceptional strength for its size.

Carefully adjusted to secure accurate working of the dies, and to prevent shearing. Pendulum action of lever gives a stroke of maximum power without tiring operator. Workmanship and material the best.

Write me for the interesting price

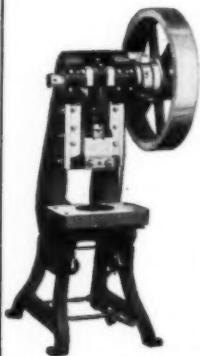
E. O. PARTRIDGE, 2041-2049 W. Lake St., CHICAGO

Also Bench, Column & Cabinet Grinders, Polishing Lathes, Light Punch Presses, Hollow Mills, Countershafts, Chuck Arbors and Saw Mandrels.



Here Is A Press

With Plenty of Steam
Back of THE PUNCH



HIGH DUTY
ROCKFORD
PUNCH PRESSES

Made in straight side and inclinable types. Their great power backed by rigid design enable them to do the work you demand and stand up to it.

Write For Catalog

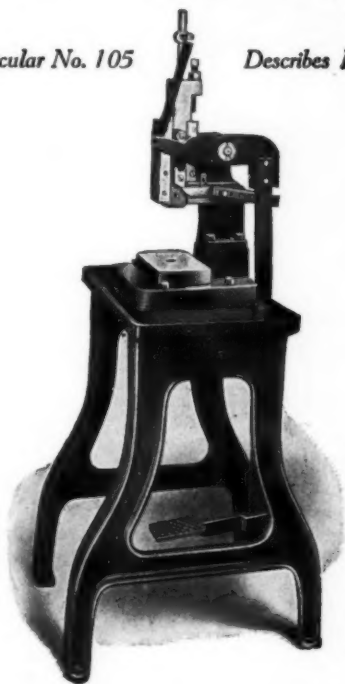
Rockford Iron Works
Rockford, Ill.

Spring Foot Press No. 105

Uniformity of Blow Vibrationless Non-Fatiguing

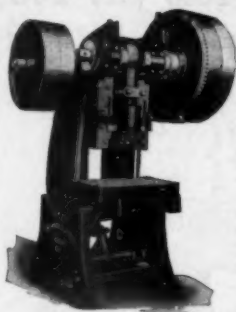
Circular No. 105

Describes It



The Taylor & Fenn Company
Hartford, Conn.

L-J Heavy Inclinable Power Presses



L-J Heavy Duty Presses are simple, handy, powerful and durable, with every modern convenience suggested by our long experience for accurate and speedy production, as well as safety to both operator and dies.

The No. 5 Combination Geared Press, shown in cut, has capacity for 52 tons pressure. It is also made in the plain flywheel type and the geared type.

Write for illustrated folder describing the various styles

Loshbough-Jordan Tool & Mche. Co.
Elkhart, Indiana

The Acme Roll Feed

Enables ONE press of any make to do as much work as TWO or THREE, saving investment, room and wages, and makes the operator SAFE.

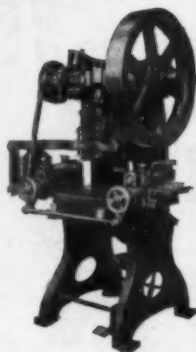
Feeds accurately at high speeds.

Furnished with scrap cutter and straightening device if desired.

Mounted on its own bolster plate, it is easily put on or taken off.

We make roll feeds, dial feeds and other special feeds for all makes of presses.

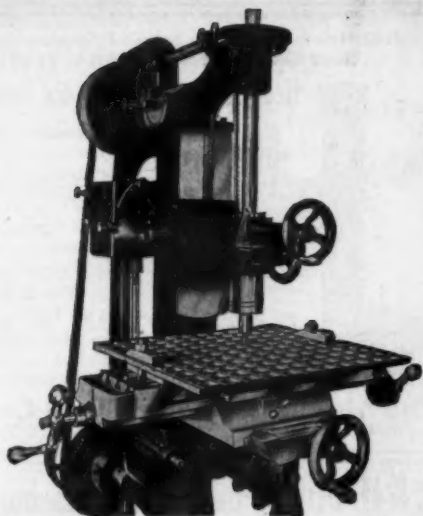
*A big practical economy
Better get in on it now*



Acme Machine Works

4125 E. Ravenswood Ave.,

Chicago, Ill.



How Would You Have Done It?

DIFFICULT, unusual jobs keep bobbing up when least expected, and it surely does eliminate worry and expense to have on hand a machine of special convenience to take care of them. The

Knight Milling and Drilling Machine

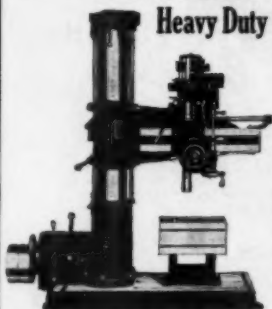
was the natural selection of a firm in Brockton, Mass., when the hard job (the mould shown in cut), was to be milled. The work was done accurately and expeditiously, of course. We would like to tell you more about these very convenient machines.

W. B. Knight Machinery Co.

3920 W. Pine Blvd., St. Louis, Mo.

It will be worth your while to carefully consider these distinctive features of the

Heavy Duty Mueller Radial Drill



Patented Stationary Column.

Combination Positive and Friction Feed.

Effective, yet extremely simple control.

Combination Low and High speed reverse for backing out taps.

And many others which this space will not permit us to enumerate.

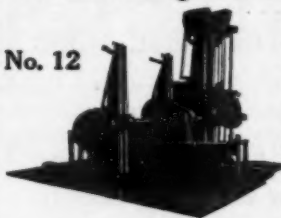
The Mueller Machine Tool Co.

Radial Drills and Lathes

Cincinnati, Ohio

P. & H. Drilling and Boring Machine

No. 12



1. Rapid traverse in each direction can readily be manipulated by slight adjustments on the hand wheel.

2. The spindle speeds are obtained by quick change gears and variable speed motor for either A. C. or D. C. current resulting in the following speed variations:

A. C. Current, 12 to 542 R. P. M.

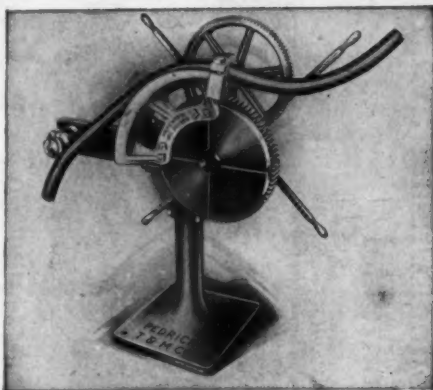
D. C. Current, 10 to 445 R. P. M.

3. The four changes of feed available for each speed are made by the operator without leaving his position near front end of spindle.

Pawling & Harnischfeger Company

Milwaukee, Wisconsin

Our Pipe Benders Meet The Demand



Ever since their invention our hand Pipe Benders have had a steady sale and have given universal satisfaction.

Recently, we have made some improved attachments that permit of a wider range of work and open up a new field in the kind of bending the machine will accomplish.

If you do pipe bending you will find our machine an economical, simple and very efficient appliance in reducing costs and doing better work. For 2" and under.

We have a Bulletin waiting for you. Send for it now.

Pedrick Tool & Machine Co.

3644 N. Lawrence St., Philadelphia, Pa.

Manufacturers of Cylinder Boring Bars, Portable Millers, Crank Pin Turning Machines, etc.

For Wide Range Boring, Drilling and Tapping

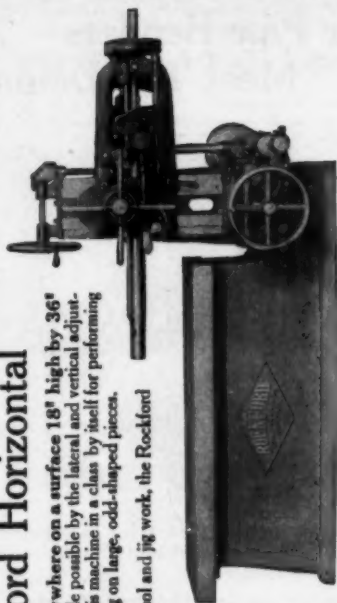
The Rockford Horizontal

The spindle operates anywhere on a surface 18" high by 36" wide. This unusual range is made possible by the lateral and vertical adjustment of the head, which places this machine in a class by itself for performing a number of operations at one setting on large, odd-shaped pieces.

With the accuracy for fine tool and jig work, the Rockford Horizontal has the capacity for 2" high speed drills and boring up to 6" or over according to the feed used.

Combines delicate adjustment with strength. A choice of six driving combinations.

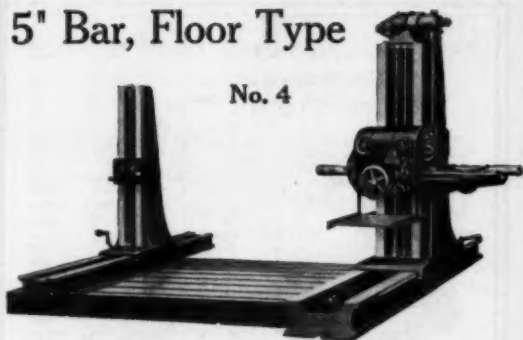
*An unusual machine
Write for complete data*



THE ROCKFORD DRILLING MACHINE CO., Rockford, Illinois

5" Bar, Floor Type

No. 4



"G & L" horizontal boring, drilling and milling machine

OF SUPERIOR CAPACITY and convenience, this up-to-date machine makes easy work of those pieces whose shape and size make it impossible to handle them on any other type of machine tool.

If the work will permit, and the necessary fixtures are supplied, it is possible to accurately machine *all five sides of the single casting with but one setting*. Machine is simple and rugged, with vibration eliminated.

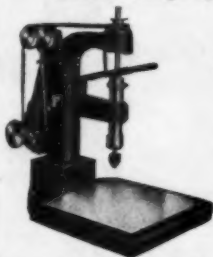
We should like to send you full details of the improvements embodied in this tool so as to give you a better idea of the economy it makes possible.

Your inquiry involves no obligation

Giddings & Lewis Manufacturing Co.
Fond du Lac, Wis., U. S. A.

You Actually Feel the Pressure

Which Makes the "Fenn" a Truly
Sensitive High Speed Drilling Machine



The spindle, accurately counterbalanced, is directly attached to the feed lever, so that the operator knows just what pressure he is putting on the drill point. He doesn't have to guess, calculate or estimate, which gives him confidence to push his machine to its capacity. The difference in production shows the great value of this feature.

Ball bearing throughout, high speed—15,000 r. p. m.—accurate and dependable in every way.

Write

FENN MANUFACTURING CO.,

Hartford, Conn.

Cable Address "Fenn." West. Union Code

W. L. Fenn. W. A. Fenn.

Bench Drills

with 1 to 4 Spindles
 $\frac{1}{2}$ " Capacity.

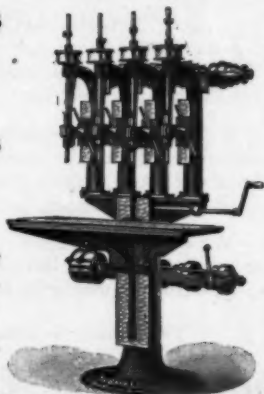
Floor Drills

1 to 7 Spindles
 $\frac{1}{2}$ " to $\frac{3}{4}$ " Capacity.

Power feed on as many
spindles as you want.

Francis Reed Co.

43 Hammond St.,
WORCESTER, MASS.





**Hammond
Sensitive
High-Speed
Radial Drills**

**For Speedier
Light Drilling
and Tapping**

Especially built for light drilling and tapping work. A single motion brings the drill over any part of the work. Great range of adjustment. Drill radius 48 inches.

Entirely self-contained—just "hitch" to belt or motor. Three spindle speeds—380, 625, 1000 r. p. m. Can be arranged to give spindle speeds up to 2000 r. p. m. Standard Wall type (without base) can be supplied.

*Write and find out how you can cut your
light drilling and tapping costs 25% to 33%*

The Hammond Mfg. Co.
Cleveland, Ohio, U. S. A.

Fast and Smooth Running "Demco"

Runs rapidly and smoothly at a spindle speed of 12,000 r. p. m. Completely equipped with Norma ball bearings, and the belt adjuster and belt stretch compensator practically eliminate vibration.

The adjustable quill bracket insures perfect alignment of spindle in any position at all times.

It is rapid, handy, accurate and durable. Built also in the floor type, with 1 to 4 spindles.

Write for particulars



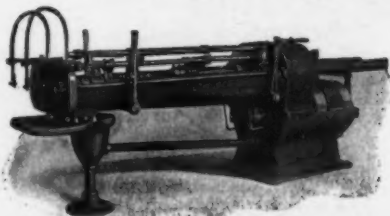
The Demco Machine Tool Co.

Successors to The DeMooy Machine Co.

708 Frankfort St., N. W.

Cleveland, Ohio

Broaching Machines And Broaching Tools



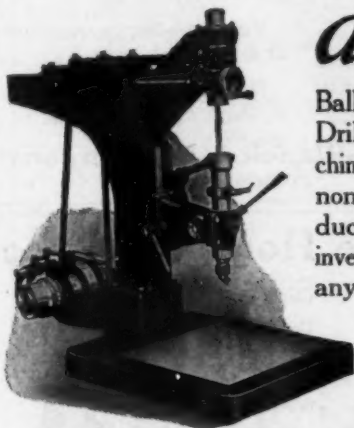
Our Famous Double Machine

The Most Complete Line In The World. We make our machines in 5 sizes and 11 types. *Send for particulars.*

THE J. N. LAPOINTE CO., - - New London, Conn.

Economical Drilling

Wide range, convenient controls, low power consumption, capacity for high speeds and rigid quality construction make the



Avey

Ball Bearing Drilling Machine an economical producer; a good investment in any shop.

Details are well worth investigating.

Write today

The Cincinnati Pulley Machinery Co.
Cincinnati, Ohio



"Buhr" Drill Heads

Adjustable and Fixed Center

All-Ball-Bearing

Adjustable from 2 to 12
spindles.

Fixed center, any number
of spindles.

We guarantee our Heads
to stand up to capacity.

Nelson-Blanck Mfg. Company
Detroit, Mich.

Three Holes At Once

Save Time

Don't waste time and
money by drilling one
hole at a time where
it is possible to drill
three.



**SELLEW
Adjustable
Drill Heads**

drill three holes at once.
Special Heads made
to fit your work.



Sellew Machine Tool Company
Pawtucket, R. I.



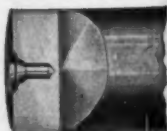
IT PAYS TO USE
The Sipp Quick-Change-Speed Drill

Because you can change speeds in two seconds.

Write for Bulletin No. 4

The Sipp Machine Company
Keen Street, PATERSON, N. J.

**It saves much time and
insures uniform centers**



The "Apex" Combined Center Drill And Countersink

An effective, practical device for the centering of lathe work which saves much time, insures uniform centers, eliminates guessing, and improves the appearance of the work in a way that pays a good deal more than the cost of this simple tool.

The added countersink allows of facing the work clear to the center without the use of half centers or the rather delicate operation of partially withdrawing the tailstock spindle.

It permits either or both ends being faced before, after or between turning or other operations, as facing has no effect on the real center or inner countersunk portion. This eliminates several handlings of the work and changing of tools and dogs.

The "Apex" allows a depth of center which is theoretically correct before the countersink operates, doing away with all guesswork and insuring uniformity.

*Better have one—you'll want more
Literature sent promptly upon request*

The Apex Drill Company
2455 W. McMicken Ave., Cincinnati, Ohio



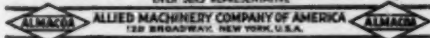
The Picture
shows one
of our
252
Varieties
with
1 to 8
Spindles
for $\frac{3}{4}$ "
Drills and
Smaller

The improvements in Henry & Wright machines have revolutionized sensitive drilling. Their gearless power transmission with frictionless bearings delivers practically all the power to the working point, insuring faster work and longer wear. Our literature fully describes this and other valuable exclusive features.

Write for Catalog, with free Speed and Feed Chart

The Henry & Wright Mfg. Co.
760 Windsor St., Hartford, Conn.

OVER-SEAS REPRESENTATIVE



Principal Foreign Offices: Paris, Turin, Zurich, Barcelona

"One Of The Biggest Time-Savers In The Shop"

So says a superintendent who has brought the production of his plant up to maximum by taking advantage of just such time-saving tools as

Nicholson Expanding Mandrels

One set of nine "Nicholsons" affords an instant fit for any size round or square hole between one and seven inches.

No more hunting around for a different mandrel for each job—they put a stop to wasted time.

Modernize your shop. Write now for free 30-day trial—no obligation involved.

W. H. Nicholson & Co.
117 Oregon St., Wilkes-Barre, Pa.



**Put
Them In
Your
Shop**



After-the-War Economies

The return from war waste to peace economies necessitates cutting costs pretty close, and a good way to begin is to discard the use of solid taps and dies.

The Murchey

Collapsing Taps and Self-Opening Dies

do the work in half the time, without danger of stripping or damaging the threads. They also last longer than solid tools. You simply change chasers and re-grind them while another is on the job. Don't overlook this opportunity for materially cutting costs and speeding up production at the same time.

Murchey Machine & Tool Co., 58 Porter Street
Detroit, Mich.



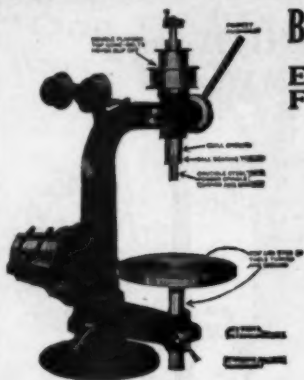
Silver's 25" Drilling Machine

If you want an upright drilling machine which comes marvelously close to being 100% efficient, you want the latest product of the Silver organization.

It has eight spindle speeds; six positive geared feeds; two quick return levers—one available for hand drilling in light work; graduated automatic stop to down feed; sensitive counterbalance for spindle and sliding head, and a design and construction throughout which insures ample power, sturdiness, convenience and a big output.

Write for specifications of Silver's 20" and 25" Drills

The Silver Mfg. Co., 295 Broadway, Salem, Ohio



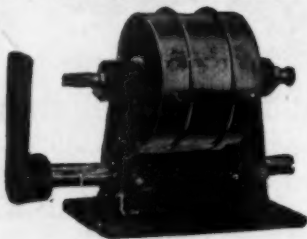
Burke Quality Excels on Fine Points

Machines of
Burke Quality
are never built
with any name
cast on the
frame but our
own—

**BURKE
CONNEAUT
U. S. A.**

For Sale Everywhere

This Tapping Machine Now Has Greater Capacity



**Burke's
No. "D" Taps
 $\frac{5}{8}$ " Holes
in
Horsehoe
Steel**

BUILT throughout with exceptional care, our several sizes give service in proportion. Accurate, rapid and convenient, they give solid satisfaction. No. "D" sells for \$60.

Send for details today

The Burke Machine Tool Co., Conneaut, Ohio

The Aurora—

The Drill With the Pull

The Aurora is built in sizes 21" to 36".

Column and base are heavy and well ribbed, and the entire machine is built for power, convenience and a generous output.

The large pulley diameter and ratio of gearing insure the greatest pulling capacity or power at the drill point, where the work is done.

The extra large table bearing prevents the table from tilting when the operator forgets to clamp it, insuring a hole that is square with the work, even with careless handling.

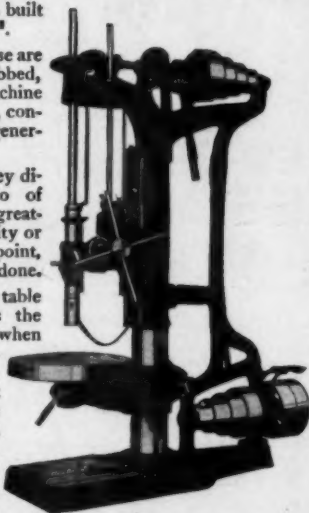
Worm wheel drops automatically, giving a positive release. Tapping attachment, compound table, drill lubricating outfit and motor drive if desired.

We are able to offer these excellent drills at a low price for quality, because our factory is modern, it is devoted exclusively to the one purpose, and our overhead is unusually light for the volume of our business.

Write for description and price list of sizes you need

The Aurora Tool Works

Aurora, Ind., U. S. A.



Kelly Production Tools

**Increased the Output Over
100 Per Cent. No Scrap.**

Multiple Tools and Reamers from 1" to 12"

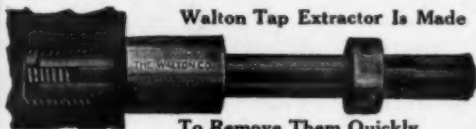
Catalog J-5 on Request

KELLY REAMER CO., Cleveland, O.



Tap Breaks — That's Plenty

Your Loss Should Stop Right There



Walton Tap Extractor Is Made

To Remove Them Quickly

YOU DON'T WANT your high priced mechanics spending a lot of time digging out the pieces. Their time is too valuable, and besides, the work is being delayed. The Walton removes broken taps quickly without injury to the threads. Sizes from No. 8 to 1 1/4". Try one out for 60 days—at our expense.

Send for interesting folder and prices

THE WALTON CO., Hartford, Conn.

Canedy-Otto 20" Drills

Are Up-to-the-Minute Tools

These new and improved 20-inch power drilling machines combine simplicity, speed and accuracy for drilling holes up to 1½ inch. They are rugged in construction, smooth and noiseless in operation, and have the graduated and automatic features found in high-priced tools. The gears are cut on automatic machines.

The bearings are of the best babbitt metal, with *Randall hydraulically pressed sheet graphite cones*, which increase their life 300 to 400%.

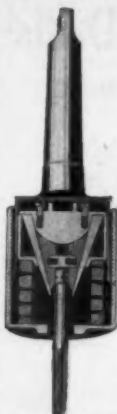
We do not believe the new and improved Canedy-Otto 20-inch Power Drilling Machines can be equalled—certainly not surpassed—in their output capacity for the investment. When desired, we equip them with motor all-spur-gear drive, also with new and improved tapping attachment.

*You will be pleased with both the quality and price
Glad to send you complete information upon request*

Canedy-Otto Mfg. Company
Chicago Heights, Ill.

Manufacturers of Forges, Blowers, Drills, Lathes and Grinders





Positively Eliminates All Tap Breakage

In constant use for years, it is daily performing the most difficult work of tapping tough metals, blind tapping, and bottom tapping in shallow holes. The—

Woodstock Improved Safety Tapping Chuck

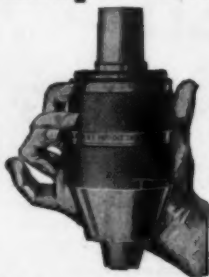
automatically releases tap the instant it binds or touches bottom, positively eliminating tap breakage. Used by U. S. Government and leading automobile manufacturers. Made in five sizes.

*Glad to send one for trial
on your most difficult work*

Peter Bros. Mfg. Co.

115 Railroad St., Algonquin, Ill.

Eclipse Self - Tightening Drill Chuck



Roller bearing.

Quickest and easiest grip, and it never slips.

Self-tightening. No keys or wrenches. Thumb and finger are all the tools required.

It has no rival in its combination of quick and firm gripping, easy release, simplicity and accuracy.

Saves time and money on high speed drills, screw machines, automatic and turret machines.

You need it now. Why wait?

Nielsen-Barton Chuck Co., 106 S. Jefferson St.
CHICAGO, ILL.

Also makers of Arbors for all kinds of Chucks

YOUNG, CORLEY & DOLAN, Inc., 115 Broadway, NEW YORK CITY
New York District Agents

JACOBS IMPROVED DRILL CHUCKS

The drill chucks of widest use—

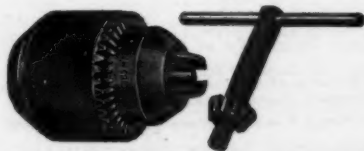
Because the operators like them—
they find them the handiest to use.

Because the employers like them—
they find that they save time and drills
and promote drilling efficiency.

Because both employers and opera-
tors recommend them to others, and
they in turn recommend them again.

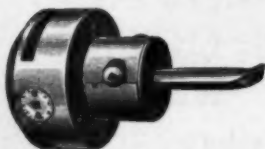
Write for Catalog of the drill chuck
that you will be glad to recommend
to your best friends—just as others
are doing everywhere.

The Jacobs Mfg. Company
Hartford, Conn., U. S. A.



Casler Offset Boring Head

Accurate, Dependable, Time-Saving



You will find it compact, shapely and rigid, and a revelation of efficiency in boring holes to size in jigs, tools, fixtures, or any irregular shaped pieces.

This modern method not only saves time, but it enables you to use the ver-

tical and horizontal adjustments provided on the machine. This assures you of a high degree of exactness in both the location and sizes of holes.

Styles and sizes to meet practically all requirements are shown in our Catalog C. Write for details—no trouble to send them.

MARVIN & CASLER CO., Canastota, N. Y.

The Madison Adjustable Boring Cutters And Bars



They are better than reamers for boring absolutely straight holes of any size, because they insure greater accuracy and uniformity in results at less cost.

Used for close boring by the U. S. Government and by several of the largest motor concerns in the country, because of their great accuracy, convenience and economy.

Pleased to mail description and price list upon request

MADISON MANUFACTURING CO., - Muskegon, Mich.

SELLING AGENTS: Thomas Crowther, Room 34, 19 Pearl St., Boston, Mass.
Firmhill Machine & Supply Co., 602 Kerr Bldg., Detroit, Mich.

Employers and Operators

Attest Their Unvarying Quality



THOUSANDS of users everywhere attest the high and unvarying quality of—

"Wear-Ever" Tap Chucks

The employer likes them, because they *save time, taps and money* for him, and require no especial skill in handling.

The operator likes them, because they are so *simple and easy to use*.

They adjust automatically and they *eliminate breakage* in driving taps of all sizes—they drive them true, regardless of shank variations.

They stand up under the severest test, and are so simple, practical and efficient that once used they are always used.

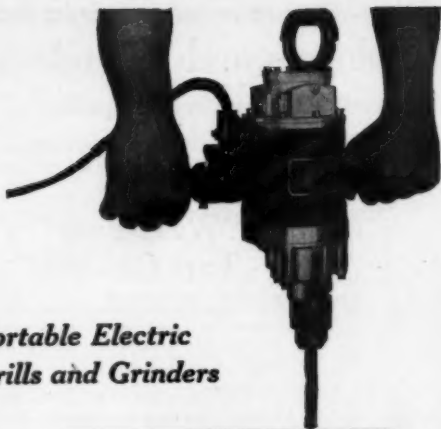
Made of one piece and hardened, they outlast several friction chucks, for there is nothing to slip, wear, break or fail, and they are sold at a low price.

*A trial order is convincing
How about today?*

Scully-Jones & Company

Suite 555 Railway Exchange Bldg.,

Chicago, Ill.



**Portable Electric
Drills and Grinders**

"Van Dorn"

Construction means that motor and switch are the work of our own expert designers.

The motor is built in our own plant, insuring dependable service at all times.

**The *Van Dorn* Electric Tool Co.
Cleveland, O.**

Sales Offices in all the Principal Cities

IMPORTANT ANNOUNCEMENT

The McCrosky Reamer Company

will in future be known as

McCrosky Tool Corporation

With the rapid growth of our business and the inclusion in our line of many new tools, we have for some time felt that our old title was misleading. In order, therefore, that the name of our company should not give the impression that we manufacture Reamers only, we have adopted a name that is broad enough to cover the whole line of McCrosky Cost Cutting tools, as well as new ones which we shall bring out in the future.

There is no change whatever in the personnel of the company, nor in any department of our business—merely the change of name.

In peace as in war-time, the problems confronting the American Manufacturer is maximum production at lowest cost. Every manufacturer is asking himself two vital questions:

- (1) How can I continue to pay the abnormal wages established by war conditions?
- (2) How can I reduce my prices in order to compete successfully in the World's markets?

The answer to both questions must be found in *greater output per man*, with correspondingly reduced production cost.

Every McCrosky Tool was developed with this one object in view. Having contributed its full share to winning the war by helping to increase the output of America's Machine Shops, we are now prepared, with a larger organization, with capacity doubled and with a perfected line of efficiency tools, to help solve the problems of peace.

McCrosky Tool Corporation

Meadville, Pennsylvania, U. S. A.

We Do Not Claim

B-G CASE HARDENING COMPOUND

To Be BETTER Than Cyanide

**WE DO CLAIM THAT IT IS EQUALLY
SATISFACTORY &
MUCH CHEAPER**

You will agree with us when you try it

LUMP OR POWDERED FORM

Write for Booklet

Bell & Gossett Co.

613 West 30th St., Chicago, Illinois

Phone: Boulevard 2067

Case Hardo

The Ideal Quick Case Hardening Compound

Hardens quicker, cleaner, deeper and without poisonous fumes.

Used the same as C. P. Cyanide or other quick case agents.

Can be used a number of times, without losing its hardening qualities.

A trial only will demonstrate its ability.

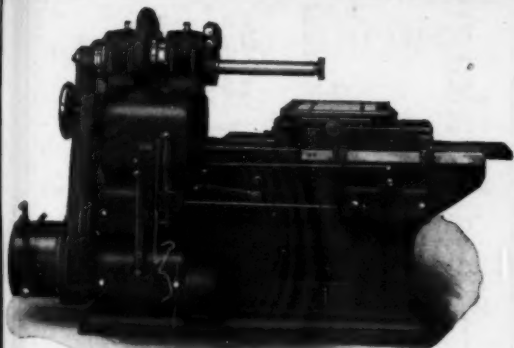
Write for information and prices.

Manufactured Only By

The Thos. Buchanan Company

29 W. 3rd St., Cincinnati, Ohio

Established 1886



The New Heald No. 65 Cylinder Grinding Machine

This is a production machine carried to the highest degree of development, and is therefore of vital interest to manufacturers.

All control levers are in a very small radius, as can be readily seen.

Note also that the Dog Bar is attached to the Intermediate Plate, giving a feature never before used. The relation between the dogs, the work, and the wheel always remains the same when a vertical adjustment is made.

The frame is cast solid, giving great rigidity and stability.

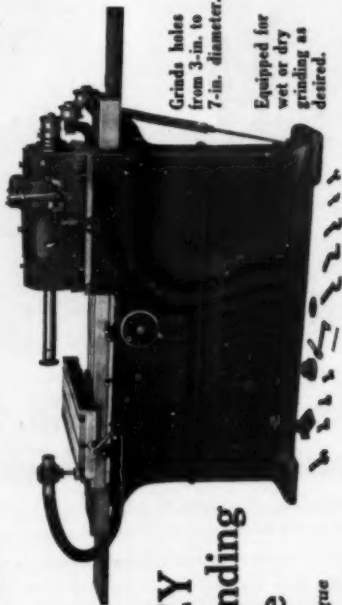
QUICK DELIVERIES CAN BE MADE

Write us for further information

The Heald Machine Company
Works: Worcester, Mass., U. S. A.

Better Compression—Less Leakage

by finishing
Aeroplane and
Automobile
Engine Cylinders
on a



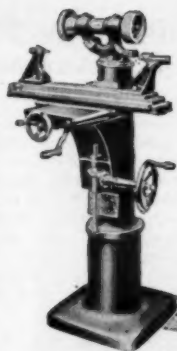
WHITNEY Cylinder Grinding Machine

Write for Catalogue

Grinds holes
from 3-in. to
7-in. diameter.

Equipped for
wet or dry
grinding as
desired.

BAXTER D. WHITNEY & SON, Winchendon, Mass., U. S. A.



New

"Wells" Universal Cutter Grinder No. 190

A Quality Tool



In common with the G. T. D. policy of modernity, the "Wells" Universal Tool Grinder has been redesigned and brought strictly up-to-date. Rigid inspections of raw materials and finished product assure the uniformly perfect quality of each & every machine.

Your tool room equipment is not complete without one.

A trial convinces

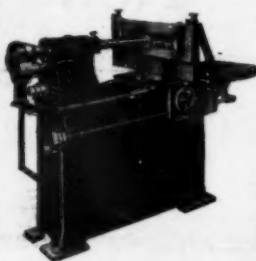
Machine Tool Division

Greenfield Tap and Die Corporation

**Greenfield,
Massachusetts,
U. S. A.**



Schmidt's Internal Grinder



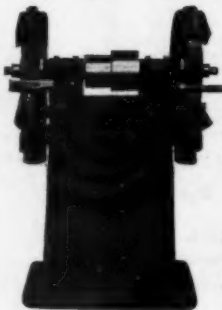
**Quick, Accurate,
Dependable**

Especially adapted to the regrounding of tractor, truck and automobile engines. Ball-bearing in rear end of emery wheel spindle and rocker arm pulley shaft. A simple, compact machine, that is easily handled, does rapid, accurate work, and is operated at a minimum cost.

The inherent value and low price of the machine will interest you. Write for details.

B. L. Schmidt Co., Dept. A 8, Davenport, Ia.

Imperial Wick Oiling Grinders

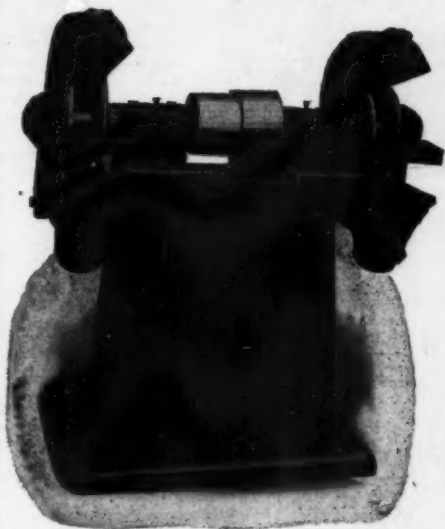


Built for 100% service on continuous, heavy work. They have large babbitted bearings, lined with sheet graphite, with wick oiling arrangement; heavy spindles; flanges half the diameter of maximum wheel size; easily adjustable tool rests and guards, for quick changing of wheels, ring oiling bearings on countershaft, etc.

Our new box bed column, shown in cut, eliminates vibration. Is regularly furnished on our 16" and 18" machines. Can also be furnished with 6", 7", 8", 10", 12" and 14" Imperials.

CLIZBE BROS. MFG. CO., Plymouth, Ind.

Grind it *on a* **"Blount"**



No. 6½

Our eight sizes meet all requirements of general grinding work. The large bearings insure accurate work under continuous heavy load.

J. G. BLOUNT CO., Everett, Mass.



IN selecting a grinding tool for your shop, consider the merits in the light of two all-important mechanical principles—*speed* and *balance*. The fact that small emery wheels will not cut properly unless driven at high speeds has been established beyond question. But with high speeds there must be perfect running balance (*dynamic*). Accuracy can be obtained only when chatter, taper and bell-mouth are eliminated.

The DUMORE grinder is mechanically perfect because these two great principles are incorporated in its construction.

Efficient, economical production is largely a matter of standardizing on parts. This, of course, means making dies, jigs and gages. Here is where a DUMORE grinder in your shop will solve your problems. Your dealer will be glad to demonstrate it and give you further information.

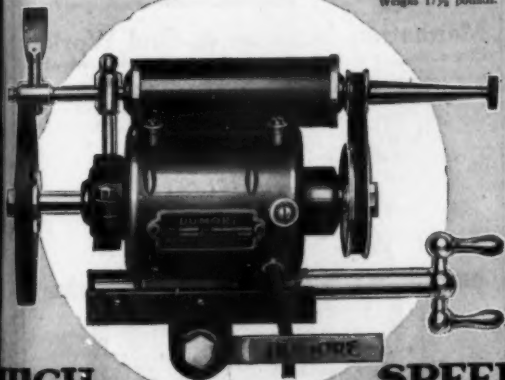
WISCONSIN ELECTRIC CO.
4308 Sixteenth St., RACINE, WIS.

DUMORE GRINDERS

**"Limits of .0001 are Easily Maintained
with DUMORE Grinders**

EQUIPMENT A

For general tool room use.
Includes High Speed In-
ternal Spindle A with reach
of 3 inches. 30,000 R.P.M.
Comes fully equipped.
Weights 17½ pounds.



**HIGH SPEED
GRINDERS**

Manhattan Surface Grinder

A Revelation in Quiet Efficiency



A powerful, compact, rigid tool of precision and quiet efficiency, improved in nearly every detail, for greater convenience, range of work, accuracy and output.

It is so massive and rigid that there is no vibration, yet it takes little floor space. Over-size phosphor bronze bearings insure a non-vibrating wheel. The entire table is surface-ground with its own wheel. Graduated dial on both feeds.

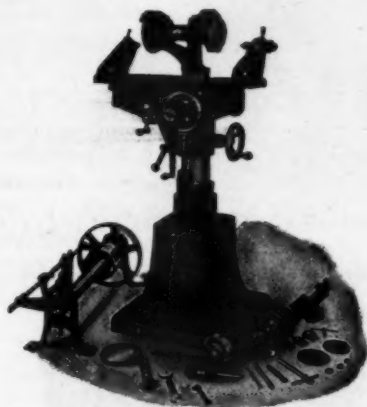
May we send complete specifications?

Manhattan Machine & Tool Works
Dept. A., Grand Rapids, Mich.



Grand Rapids No. 1

Universal Cutter, Reamer
and Tool Grinder



Simple in Design
Efficient in Service
Accurate in Workmanship
Economical in Cost

Ask for bulletin giving full particulars

Grand Rapids Grinding Machine Co.

17 Ottawa Ave., N. W.

Grand Rapids, Michigan, U. S. A.



Premier Universal Tool and Cutter Grinder

With a swing of 8" and capacity of 15" between centers, together with the regular equipment furnished, it will grind almost any cutter or other tool used in a modern tool room. Workmanship, material and design of the highest quality.

*Write for descriptive
Circular*

Immediate Delivery

Simmons 10" Universal Index Centers



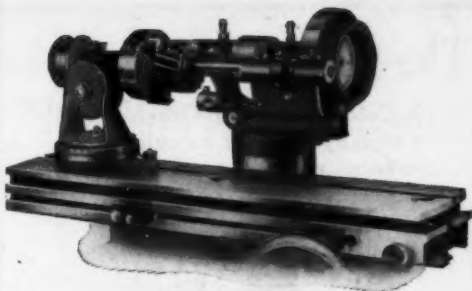
Manufactured with the idea of supplying the market with a device in which accuracy, durability and simplicity are the main issues and in which no one feature is sacrificed for another.

The price is the lowest consistent in keeping with the above standards. Our production is such that immediate delivery can be made.

You need one? Order now!

Simmons Machine Co., Inc., Albany, N. Y.

New York, 1001 Singer Bldg. Detroit, 804 Dime Savings Bank Bldg.
Buffalo, 358 Ellicott Square



The *Greenfield*

For Special Work Tools, Jigs, Etc.

If you are equipping a shop for the manufacture of special lines, this all-around Universal Grinder is just the machine you need. It handles about every kind of a job within its range, and does accurate, dependable work.

We believe we furnish the Greenfield Universal with a more complete set of attachments than can be had for any grinder selling at anything like the same price. Each attachment serves a single purpose, and is simple, practical and efficient.

Write for literature and the moderate price
We also build Plain Grinders for production work

Greenfield Machine Company
Greenfield, Mass., U. S. A.

The Thompson

**A Cutter and Tool Grinder that
is equally efficient on cylindrical,
surface and internal grinding**

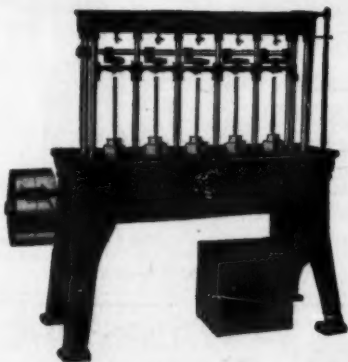


THE THOMPSON Cutter and Tool Grinder shown in the illustration is arranged for belt drive with separate countershaft. It is also made in the self-contained type for either jackshaft or motor drive.

THE FOLDER, which we shall be glad to send upon request, *shows 24 grinding and sharpening operations*, among which you may find some time-saving suggestions for your own work. We suggest that you don't delay writing for your copy.

The Thompson Grinder Co.
Springfield, Ohio

Five Spindle Vertical Nut Tapping Machine



If we simply stated that the capacity of this machine was 20,000 $\frac{3}{8}$ " hot pressed square nuts per day, you would probably be a bit skeptical of our claims, but some of our customers are even exceeding this output on this size nut—we have prima-facie evidence, and we believe that this is considerably better than any other hand operated machine is turning out.

Taps are held upright, eliminating chips dropping into nut holders and consequent loss of time in frequently cleaning these out.

May we send descriptive matter?

The Webster & Perks Tool Co.

Box 1340, Springfield, Ohio, U. S. A.

**GREATER SPEED
HEAVIER CUTS**

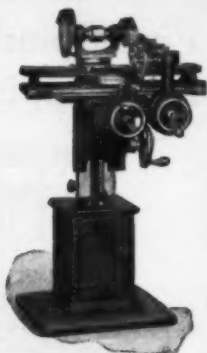
Possible on the

STERLING

**UNIVERSAL TOOL
GRINDER**

through the use of ball bearings in the wheel spindle.

Write for catalog illustrating and describing the other superiorities of the **STERLING GRINDER**

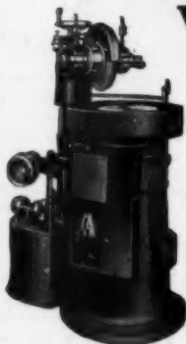


McDONOUGH MFG. COMPANY, Machine Tool
Department
Eau Claire, Wisconsin

Within .0004"

**Flat, Convex or
Concave Surfaces**

**The 12-Inch Bristol
Rotary Grinder**



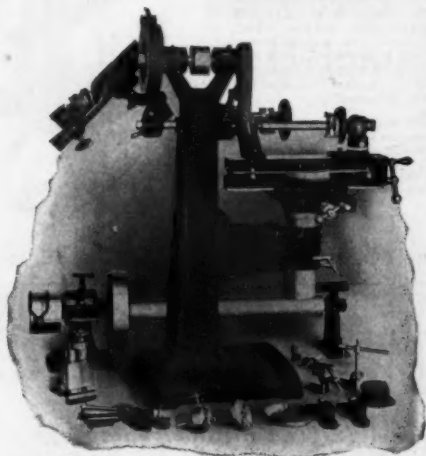
is a precision machine of the swivel back type which gains speed without loss of accuracy because it grinds continuously. We have some interesting records of work it has actually done which you ought to see. A line will bring them to you without obligation. If you grind either flat or convex surfaces you should know Bristol results.

Why not investigate?

Bristol Machine Tool Co., Bristol, Conn.
Successors to The C. G. Garrigus Machine Co.

W & M No. "O"

Universal Cutter, Reamer and Drill Grinder



Longitudinal Movement.....	12 Inches
Vertical Movement.....	6 Inches
Transverse Movement.....	6 Inches

Centers swing work 8x17 inches

Circular on request

Wilmarth & Morman Co.

Master Grinder Makers

1185 Monroe Ave., N. W., Grand Rapids, Mich., U. S. A.

The Amplifying Gauge

For simplifying your gauging system, increasing accuracy, and saving time and money.

Can be adjusted in a few minutes for any piece up to $5\frac{1}{2}$ in. on the plate. Saves time and expense of making snap gauges, which, at best, leave you to guess how much over or under size a piece may be, while the Amplifying Gauge measures it, whether round or square, in ten-thousandths.

When gauge is set, parts of any shape are accurately gauged as fast as workman can handle them.

Used by U. S. Government and large automobile concerns.

Write for Catalog No. 100



THE NORTH SIDE TOOL CO., Dayton, Ohio



Accuracy in Tapers

is so essential that you cannot do without it; and so easy to determine with a

Hartford Taper Gage

that you can be sure of it at a glance. The gage is so simple, so easy to operate, so scientifically accurate, and such a time-saving convenience and comfort in every way that large makers of tapers for any purpose buy them in quantities. An hour's use will prove them to be simply indispensable. They show inaccuracies of less than .001".

Interested? Write us.

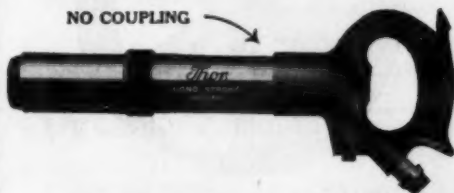
Hartford Special Machinery Co.

285 Homestead Ave.,

Hartford, Conn.

Thor One-Piece Pneumatic Long Stroke Riveting Hammer

The Hammer That
Can't Come Loose



THOR Hammers are in daily use
in the largest shipyards, railroad
shops, foundries, boiler shops and
industrial plants of all kinds.

IMMEDIATE DELIVERY

**Independent Pneumatic
Tool Company**

Chicago New York Pittsburgh Cleveland
Detroit San Francisco Birmingham Montreal

Redface Pulleys

Sheaves and Fly Wheels



PERMANENT: They are permanent, as they are not affected by age, heat, cold or moisture.

RELIABLE: They do not loosen up under vibration or intermittent loading.

RUN TRUE: They run true, steady the line shaft, and have a very small load due to windage.

REDFACE PULLEYS are especially adapted to use on motors, fans, pumps and special machinery.

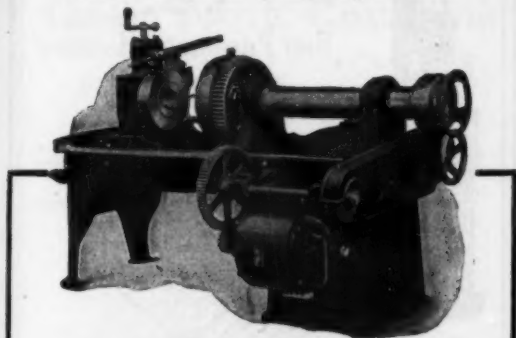
Catalog mailed promptly upon request

Pyott Foundry Co.

Cast Iron Pulleys, Sheaves and Fly Wheels
328 N. Sangamon St., Chicago, Ill.

With ordinary labor *plus* B. & Ks.

You are assured of maximum production



(No. 3 Peerless. All gears are covered)

WITH THESE Modern Pipe Threaders it is no trick at all to turn out big quantities of accurate work with just ordinary help.

The 18 styles and sizes are all equipped with the Peerless adjusting mechanism, which permits instant adjustment to the thousandth of an inch. A gear box drive eliminates all guess work regarding right threading speeds. The larger machines are equipped with two gripping chucks; the rear chuck is provided with flange grippers for making up flanged work by power.

Economize by installing B. & Ks. Send us your address and we will forward complete data.

Bignall & Keeler Machine Works
Edwardsville, Ill.



It's Portable

RESOLVE!

To Have a

Barr Pneumatic Hammer

In Your Shop or Tool Room

We know you need it!

We know it will prove one of the most profitably adaptable savers of time and money you ever bought.

If necessary cut something else off your list rather than omit this winner.

Write for Bulletin 10H.



Fairbanks Hammers

25 to 300 lbs.

Belt or Motor Drive

These Hammers Embody
a Design and Workman-
ship that are Unsurpassed.

Send for Catalog

United Hammer Co.

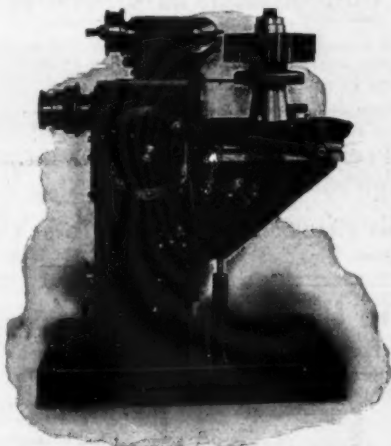
Oliver Building, Boston, Mass.

SALES AGENTS

The Fairbanks Company—Albany, Baltimore, Boston, Bridgeport, Buffalo, Chicago, Hartford, Newark, New Orleans, New York, Philadelphia, Pittsburgh, Providence, St. Louis, Syracuse, Havana, London, Glasgow, Paris.

Guaranteed Gear Tooth Rounding

In Quality and Cost



The Cross Gear Tooth Rounder

Has revolutionized both quality and quantity production. It rounds 24 teeth per minute, of any pitch $\frac{1}{8}$ or finer, and it makes the end of each tooth a perfect half circle from tip to root.

Tell us what your sliding gears are, and we will guarantee the work and the time and cost of rounding teeth on this machine.

Cross Gear & Engine Company
Detroit, Michigan

Patented here and abroad; sold ONLY by us

ELECTRIC EUCLID HOISTS

Let OUR Engineers Save YOUR Time

It is possible that you realize the need of modern material handling equipment but cannot spare the time or men to work out the details.

Our engineers are constantly solving these difficulties and helping manufacturers reduce expenses.

Furthermore, this service is absolutely free.

Will you take advantage of it?

The Euclid Crane & Hoist Co.
Dept. C EUCLID, OHIO, U. S. A.

"The Handiest Tool in the Shop"

For both Big Plants and Smaller Ones



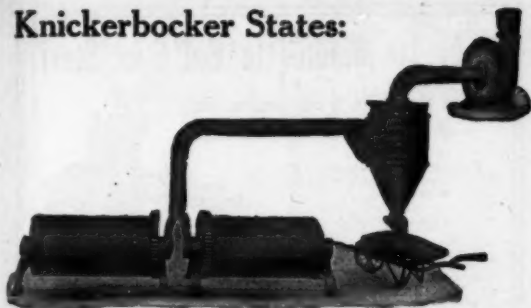
Many of the largest plants use several "Handiest Tool" Canton Floor Cranes, to relieve their larger cranes and to carry work to parts of the shop where the overhead cranes cannot reach.

In smaller shops it takes the place of an overhead system, at the same time serving as a crane, hoist and truck. It is so handy and saves so much time and labor that you can't lose.

*Write for Booklet E-8
describing the many sizes*

CANTON FOUNDRY & MCHE. CO., Canton, O.

Knickerbocker States:



Nearly Half the Power is Saved

With "Rarefied" Dust Collectors



As told to Knickerbocker:

"This reduction in horse power is a great thing. Today we are operating the entire department with two 10s and one 5, making a total of 25 electric horse power, and before the installation of your Collectors we used 45 h. p. to do the same work."

Name of customer on request.

That's the experience everywhere—in big plants and small ones, and with all kinds of heavy and cutting dust—the "Rarefied" saves power and repairs, assuring big economy and long life. With the "Rarefied" the dust is collected and automatically discharged before the air reaches the fan, hence there's no cleaning out by hand.

*Do not miss this worth-while economy.
Send for our interesting Booklet today*

The Knickerbocker Company

Jackson, Mich.

Only 10 Minutes to Cut 6-in. Steel

**The Marvel No. 4 cuts smaller sizes
of cold rolled steel in proportion**

Cuts on the draw stroke and lifts free of the cut on the return. A graduated free wheel gives any desired pressure on the saw blade.

Machine stops automatically when piece is cut off, and can also be set to stop at any desired depth in the cut. It embodies speed, accuracy and expert workmanship. We also make other hack saws, punches and shears.



Write for Circulars

Patent Applied For

**Armstrong-Blum Mfg. Co., 314 N. Francisco Ave.
CHICAGO, ILL.**

Saves Time and Material

**Cuts Hardened Steel Rods or Bars, Reamers,
Taps, Copper and Brass Tubing, Aluminum,
Etc., Quickly, Smoothly and Without Waste**

Peter Bros. Ball Bearing Abrasive Cutter

—is a big economy in the tool room or wherever such material must be cut. Has a rapid, thin, clean cut. Doesn't draw the temper, saves grinding, saves time and much valuable material. Soon pays its own cost.

8" Size \$17.50, with C. S.
Splendid for tool room. Cuts high-speed steel up to 1" square.

12" Size \$50, with C. S.
Cuts up to 2 1/2" diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

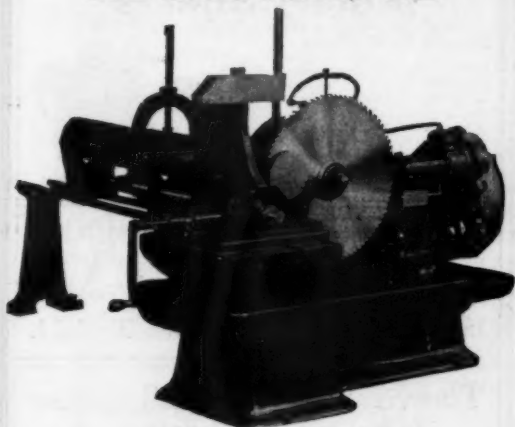
Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.



No. 6 Metal Sawing Machine

Built Like a Machine Tool



CAPACITY

8½' Rounds
7½' Squares

12' I-Beams
7x10' Billets

WILL CUT IN MULTIPLE

34 Bars, 1" Diameter	8 Bars, 2½" Diameter
19 " 1½" "	4 " 3" "
8 " 2" "	4 " 3½" "

TWO Saw Speeds for hard and soft stock.

FIVE changes of feed for each saw speed.

Feeds from 3-16" to 2" per minute.

Automatic Feed.

Automatic Return of Carriage.

Rack and Pinion Stock Feeding and Gauging Device.

Four other sizes; also Automatic Saw Sharpening Machine.

Catalogue

Cochrane-Bly Company

Rochester, N. Y., U. S. A.

"QUICKWORK"

REGISTERED U.S. PATENT OFFICE

Rotary Shears

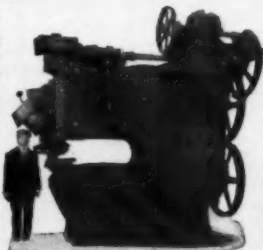
Made in 6 Sizes

Cut all gauges of sheet and plate metal up to 1 inch thick in straight or irregular shapes and openings without cutting in from side of sheet. Leaves square, true edge that requires no finishing. Used in building ships, boilers, tanks, cars & general plate and sheet metal work.

Save 50 to 90%

Eliminates Oxyacetylene cutting and plate planing

Write for catalogue

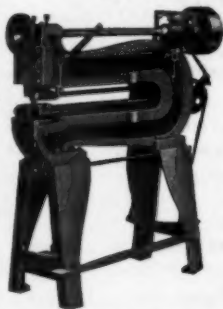


Patented June 3rd, 1913

THE QUICKWORK COMPANY, St. Marys, Ohio, U. S. A.

The Gray Sheet Metal Cutter

Four Sizes for Plates up to 5/8"



Nos. 0, 1, 2 and 3 machines are built with respective capacities as follows:

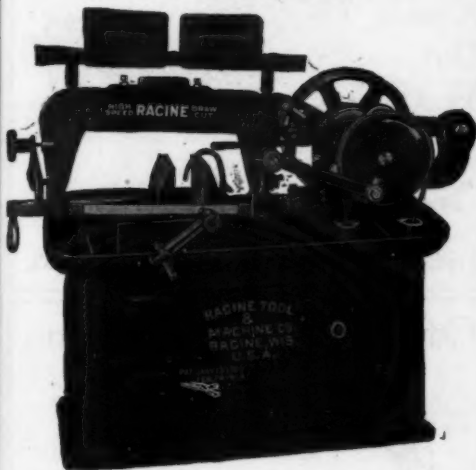
18"	throat,	cap.	up to	1/8"	plate
34"	"	"	"	3/16"	"
36"	"	"	"	3/8"	"
36"	"	"	"	5/8"	"

It is not a rotary shear. Does all a shear will do and a lot more. Feeds automatically like a sewing machine, follows any intricate pattern, cuts clean edges and leaves metal flat. Makes hard cutting easy. Saves time, money and material.

*You should know about it
Write for full description*

W. J. SAVAGE CO., Knoxville, Tenn.

For Greater Speed and Greater Accuracy
use the
"Racine" High Speed Metal Cutting Machine
Standard the World Over



A compact machine that

Saves Time

Saves Blades

Saves Labor

Saves Material

Made in twenty-two different types. Tell us the size stock you are cutting and we will quote you on a machine suitable for your requirements.

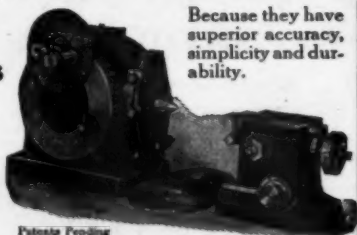
Ask for our new Catalog H.

Racine Tool & Machine Co.

Racine, Wisconsin, U. S. A.

Use "RACINE" H-S Tungsten Power Blades

Dickow's Index Centers Knock Out Worry



Because they have superior accuracy, simplicity and durability.

Patents Pending



PROMPT DELIVERY

For Accuracy Get Dickow's

Sold by dealers. Write us today.

Fred. C. Dickow, 35 So. Desplains St., Chicago, Ill.

Common Sense Tells You



that your money will not buy a better tool than one correctly manufactured from the best raw material procurable.

Tungsten-alloy steel, milled teeth and uniform temper are all features of

Liberty Hack Saw Blades

Liberty blades are more than ordinary hack saw blades—they represent the utmost in the construction of metal cutting saws.

Our .049—10 point blade is recommended for use in all high speed hack saw machines.

Sterling Products Co., Inc.

**549 Washington Blvd.,
CHICAGO**

**15 Park Row,
NEW YORK**

Peerless **HIGH SPEED**

The New Standard—50 to 100% Greater Output



Repeat Orders—

Here we are talking about repeat orders again, but if you could see the way they come in you would pardon our dwelling on that subject.

The one striking feature about our repeat orders is that so many of them come from large concerns who had been reasonably satisfied with other standard makes before they put in their first Peerless High-Speed, and since then they have sent us order after order for more and more of our machines.

Surely there must be some good reason for this, which will be perfectly clear to you when you try out a Peerless for yourself.

*Let us ship you one on thirty days' trial
If you don't keep it we pay freight both ways*

Peerless Machine Company
1609 Racine Street, RACINE, WISCONSIN

Much Cheaper Burnishing Of a Higher Quality



The
Abbott
Burnishing
Barrel

Of course you would like to burnish your small metal parts at a saving of 75% to 99%, especially when you can improve their quality at the same time.

Of course you would. But —we know how it is—you are busy and put it off.

But isn't such procrastination rather expensive? Why not write today for our free copyrighted booklet on burnishing, and post yourself, anyhow?

Also send along samples for burnishing, if you wish

The Abbott Ball Company

Elmwood District, Hartford, Conn.

Get the best from your workmen by providing a place for everything

The Ritchie - Wertz Modern Bench

is carefully designed to provide a place for everything, including stocks, tools, blueprints, etc., etc. Large users find that they increase efficiency by permitting their mechanics to work systematically. They promote *system*, the *great* of *economies*. You cannot expect the maximum of skill and production from your mechanics if they have old style benches strewn with litter. Get acquainted with the new way.



Write for particulars

THE RITCHIE-WERTZ CO., Dayton, Ohio



A recent meeting of the Steel Treating Research Society at Detroit was devoted to a study of Sand Blasting.

The lecturer was the "Flint Shot Man." He showed slides to illustrate the remarkable progress of the sand blasting art.

To those heat-treating superintendents, foremen, engineers and experts he gave some new ideas for the use of the sand blast on raw and heat-treated materials to remove mill and furnace scale.

Figures given showing saving of tools and dies on steel thus sand-blasted were little short of startling.

Much of the information contained in his lecture, reflecting the practices in over 60 great American plants, is contained in our book—"*Little Journeys of The Flint Shot Man*"—send for it.

United States Silica Company

1941 Peoples Gas Bldg.,

Chicago, Ill.

Assures Correct Indexing



**R
E
D
-
E**

Compensating Milling Machine Dog and Driver

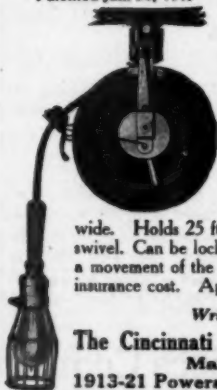
Spoiled or botched work always adds enormously to the cost of your product. This Red-E tool positively eliminates incorrect indexing, dog cannot work loose, and cramping or springing of work is avoided. It is really indispensable for milling all kinds of work. No adjusting necessary for odd pieces.

*Used successfully in the biggest plants
A trial will convince you*

THE READY TOOL COMPANY

Bridgeport, Conn.

Patented Jan. 30, 1917



Automatic Extension Reel

Makes Extension Lights Safe

No wires laying around in the way—no lamps broken—no insulation ragged out—no short circuits.

This handy little reel is only 9 inches in diameter and 2 inches wide. Holds 25 ft. of reinforced cord. Turns on a swivel. Can be locked or released automatically with a movement of the hand. Eliminates fire risk—cuts insurance cost. Approved by the Underwriters.

Write for catalog.

The Cincinnati Specialty Mfg. Co., Inc.
Manufacturers,

1913-21 Powers St., Cincinnati, Ohio

The Genesee Adjustable Hollow Mill

Replaces Hundreds of Solid Tools. Stronger than Solid Tools. Saves Time and Money. Increases Production.



It cuts 12" to 15" a minute in steel, or to full capacity of the machines.

Adjusts to the 1,000th of an inch, and only seven sizes cover the entire range from $\frac{1}{4}$ " to 2", doing the work of hundreds of solid tools.

One set of blades outlasts three to five solid tools, and are replaced at small cost.

Never clogs up with chips and cannot change in size.

All wearing parts case hardened. Screws heat treated. Holes drilled to allow stock to pass through tool. Fits directly into turret.

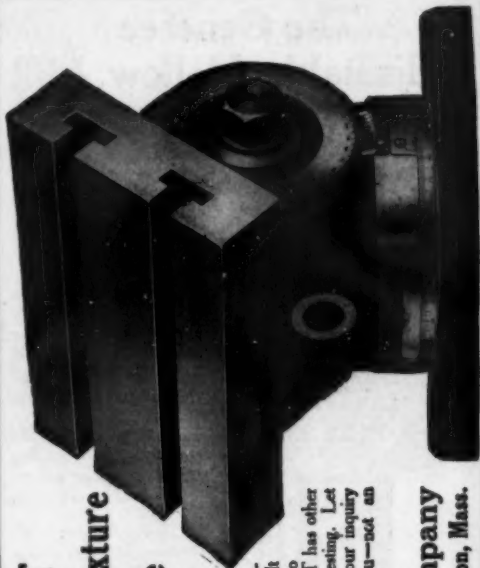
A set of these tools is a great economy and convenience. Write for description and price. Worth more than they cost.

Genesee Manufacturing Co.
Rochester, N. Y.

The BECKETT Universal Angle Fixture Saves Time

The double vernier eliminates the possibility of error, the necessity of any mental calculation, and so economizes time. It means the closest accuracy obtained in the shortest time. It means results—it means satisfaction to owner and operator. The BECKETT has other exclusive merits that you will find interesting. Let us explain them: we shall consider your inquiry merely an opportunity to show you—not an obligation to buy.

C. H. Tracey Company
161 Summer St.,
Boston, Mass.



For Accuracy and Economy

In Tool Room and General Machining



Universal Angle Plate 12"x18"—Made in Four Sizes

Invaluable for both tool room and general machine shop, insuring accurate work and a great saving in time and dollars.

It can be used on any type of machine tool, and adjusts quickly to any angle without disturbing the work bolted to it.

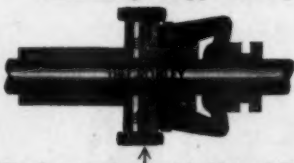
Tapers may be ground, and formed cutters ground by the addition of centers to platen. Several angles may be planed, shaped or milled on one piece with accuracy. The most convenient attachment for the die sinker made in years. In fact, its value for holding work to be machined at one or more angles is almost unlimited in respect to convenience, accuracy, time and cost.

Worth more than it costs you. Write for details.

Boston Scale & Machine Co.
100 Ruggles St., Roxbury, Mass.

Pulls More, Size for Size

Has Simplicity, Power, Endurance



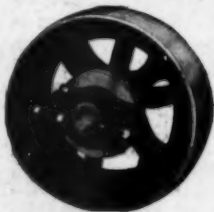
NOTE
the principle:
Friction
Wedge
Plates

The distinctive feature of the National Clutch is the above principle, which eliminates entirely wood, fibre, or other substance for friction. The pull is directly on the friction wedge plates, which gives the National Clutch its enormous pulling power. Used for machine tools, cement mills, mining, woodworking and agricultural machinery.

Give us an opportunity of explaining its various points of excellence and economy

National Clutch Co., 1859 Fulton St., Chicago, Ill.

The Carroll Clutch Has a Clean Record



ONE of the oldest and best Clutch Pulleys on the market today. They are repairless, and guaranteed as such. Let us tell you who use them. You don't have to take our word for it—ask the man who knows. Carroll Clutches last as long as the machines they drive without repairs. They are compact—and the mere tightening of one screw places them for instant use. These are Peace Times, why not have Peace with your Countershafts.



Self-oiling Double Adjustment
Double Gripping Power

May we quote you?

L. W. CARROLL MFG. CO., Batavia, Ohio

The Success of the
Catlin Key-seater
Points the Way to Economy

It is a
Time-Saver



The Catlin is in use in many Government shops, large automobile factories, navy yards, shipbuilding plants—shops of all sizes and kinds almost everywhere in the world. And it is making records for speed and low cost. Such concerns as the Tampa Shipbuilding & Engineering Co., Tampa, Fla., Los Angeles Shipbuilding & Dry Dock Co., San Pedro, Cal., and the Morse Dry Dock & Repair Co., Brooklyn, N. Y., are among recent buyers who look for maximum results from their equipment.

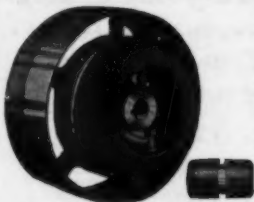
They get such results, primarily, because of the simplicity of the Catlin—it has less than half the working parts of other machines—which permits it to be made strong and effective without being clumsy. With its improved cutter bar, key-seats are cut accurately and rapidly. There is no lost motion, no variation in the size and taper of key-ways, nothing to waste time or make expense.

This machine has cut a key-way 10" long, $1\frac{1}{2}$ " wide and 7-16" deep in a cast iron hub in three minutes. It is making similar records every day on every sort of key-way you can think of.

Ask for details; they will be gladly sent without obligation

Chattanooga Machinery Co.
Chattanooga, Tenn.

**Use the clutch that's
passed the hardest test**



Enclosed Type, Self-Oiling

The Edgemont

Has been the standard clutch for years of the leading manufacturers of lathes, planers, boring mills, drilling machines, millers, shapers, screw machines, etc. (names on request). And they are still using it, because it has made good in long-continued usage on all kinds of machines.

Write for Catalog of "The Clutch that's stood the test"

The Edgemont Machine Co.
Dayton, Ohio

Special Clutches and Transmission Machinery for all purposes

Efficient to 45° Angle

$\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$, $2\frac{1}{8}$ and $2\frac{1}{2}$ in.



**Giant
Universal
Joints
For
Heavy
Duty**

Designed for heavy, fast-running machines, where highest efficiency is necessary. Self-oiling, dirt proof. Just what you want if the best is none too good. For higher angles to 70 degrees use Vanderbeek Universal Ball Joints.

Ainslie Machine & Tool Works
Successors to Vanderbeek Tool Works
HARTFORD, CONN.

Lewthwaite

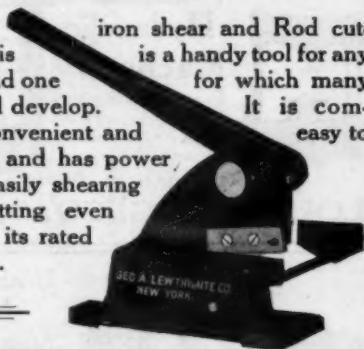
**Shearing, Cutting and Punching Machines
Power and Foot Presses and Benders
Punches and Dies**

Sheet
ter. This
shop, and one
uses will develop.

pact, convenient and
operate, and has power
to do easily shearing
and cutting even
beyond its rated
capacity.

iron shear and Rod cut-
is a handy tool for any
for which many

It is com-
easy to



Dependable Punches and Dies
for all makes of machines

Made for service and guaranteed to
give it. If you want to know just
how strong and durable a punch or
die may be made, try one on the
hardest job you have.

*Have you received our latest catalog of
Iron-Workers' Tools. If not, let us send it*

George A. Lewthwaite Co.
116 Walker St., - - New York

Any Width Arbor Presses

Any tons pressure.

Easiest and quickest
hand press made.



Quick Action Power Presses

Big capacity.
Automatic regulation.



Hydraulic Machinery

In any capacity and
for any pressing pur-
pose. Our catalog
shows real economies.

Write us

LOURIE MFG. CO. Springfield,
Illinois



No. 24 Press

Efficient Equipment Atlas Presses

for building and repair-
ing automobiles and
general machine shop
operations requiring
pressure up to 25 tons
and centering capacity
up to 36 inches.

For driving mandrels;
bending and straighten-
ing, broaching, emboss-
ing with dies, setting
bushings and many
other every day manu-
facturing jobs, there is an
Atlas Press. All sizes
for all purposes. *It will
pay you to investigate.*

Atlas Press Co.

317 N. Park Street,
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Strictly on the Square— Both Small and Great

And all GREENERD Arbor
Presses have the push that
always brings results—as
you like them



From
15 Lbs.
to
40 Tons
Pressure

We have been specializing on Greenerds for over a quarter of a century, and recommend them with the utmost confidence, whether you want to drive pins or straighten auto axles.

Greenerds have been making good for many years, and we purpose to keep them performing to your advantage and our mutual profit. Kindly send us your address so we can mail you our new Catalog.

EDWIN E. BARTLETT

NASHUA, N. H.



Support Long Stock With



LOWAY

Adjustable Stock Support

You will find it convenient, effective and a real economy. It is adapted to any machine which must be fed with long stock. Easy adjustability in height makes it a simple matter to shift the support from one machine to another, or to support any overhang. A time-saving convenience that will appeal to the man who realizes the value of minutes. We make them in two styles.

It will pay for itself over and over again.

A. F. WAY CO., Inc., - Hartford, Conn.

Good Housekeeping

Gives Satisfaction—Pays Dividends



It's poor housekeeping to have your place littered up with bar stock. It looks messy, takes valuable space, and you hardly know what you have or where to lay your hands on it. And it's dangerous, too.

"The Handiest Racks"

promote good housekeeping. They keep pipe, shafting and bars in a fourth the space, where it is easy to assort, count, and handle on or off without end hauling. It saves its cost over and over again in time, room, safety and general satisfaction.

*On trial? Sure.
Better write today*

Wm. S. Yohe Supply Co.

503 Mahoning Road, N. E.,

Canton, Ohio

Cap.
20
Tons



List
Price
85⁰⁰

WEAVER Forcing Press

WE ARE SPECIALIZING upon this one size and style of press. It is the ONLY press we make, therefore we are able to produce a better article at less money than were we compelled to carry the overhead necessary to produce a great variety of styles.

5-inch, 9-pound channel steel frame, 32-in. wide, 15-in. hand wheel, carried upon ball bearings. Bronze Thrust Bearings, Screw 2 in. in diameter with 3-pitch Acme thread. Range of movement, 12 in. The screw does not revolve.

List Price (^{32-in.}_{Width}) **\$85.00**

Weaver Manufacturing Co.

2179 So. 9th Street,

Springfield, Illinois

Pattern Shop Machinery

Special Prices if you refer to this ad.



Band Saws

Chicago No. 00 27 in. Wheels

" No. 0 32 " "

" No. 1 36 " "



Saw Tables

Chicago No. 5 Stationary Table

" No. 9 Tilting Table

" No. 10

Boring attachment if wanted.



Jointers

8 in., 5 and 6 ft. tables and guard.

12, 16, 20, 24 and 30 in., 7 ft. tables and guard.

Trimmers, Lathes, Core Box Tools, etc.

Ask for full descriptions

Chicago Machinery Exchange

1211-1227 Washington Boulevard, Chicago



Hitchcock's List

Goes to the Heart of 96% of
the Best Plants in the Country

The above statement is the result of careful mail inquiries directed to thousands of the larger tool-using concerns.

Alert Roller Grip Stub Arbors



Be up to the minute! Get a 25% increased production! Adopt ROLLER GRIP STUB ARBORS for your work. Don't waste your time driving Mandrels in and out of your work, let a ROLLER GRIP do it. Forget your arbor press. Stub Arbors made in all sizes.

Send for circulars (SA).

Alert Tool Company

237 North 6th St.,

Philadelphia, Pa.



Style "C"



The Hinge



Style "Y"



Style "B"



Style "G"



Style "O"



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Style "T"

GITS OIL CUPS

Give perfect satisfaction where others fail. State style and size in which you are interested, and we will send free samples and catalog.

GITS BROS. MFG. CO.

1946 SO. KILBOURN AVE., CHICAGO



Style "H"



**Handles
From
Steel**

For power tools and similar purposes

Accurate, highly finished, complete on receipt, ready to attach. Manufactured as a specialty, we offer you the result of quantity production, in quality and price. Estimates given on large screw machine work, handles and screws of any description.

Write for price list and discounts

The Cincinnati Ball Crank Co.

Oakley, Cincinnati, Ohio



Tucker's Safety First

Oil Hole Covers

Require but one hand to pump in the oil. Adapted to all kinds of mechanism having oil holes leading to a bearing, and locate the parts to be lubricated.

*Send for Catalogue
Oil Hole Covers No. 5*



Style G, Closed



Style G, Open

Style E



Style C



Style F, Drive



Style A



Style B



Style D, Open



Style D, Closed



Rotary Head

W.C. & F.C. TUCKER, Hartford, Conn.

For Rapid Production

You Can Rely on Sweetland Chucks



No time lost in chucking a piece, and none wasted in rechucking. They get a firm grip the first time, and they hold it until released.

*Let us send
Catalog 11-C*

The Hoggson & Pettis Mfg. Co.
New Haven, Conn., U. S. A.



We manufacture a great variety
Lathe Chucks, Drill Chucks, Centering Chucks
Also
Portable Jaws for Lathe face plates and Machine tables.

Let us send you our Catalog

The Cushman Chuck Co.
Established 1862 *Hartford, Conn.*

Barker Wrenchless Chuck

Independent, Universal, Self-Centering

Saves
Time
Between
Cuts

And
Time
is
Money

For the faster chucking of any type of work that is done on turrets, engine lathes or semi-automatics

The only device for quick chucking which does not require a considerable investment. The work is centered automatically and chucked instantly with the simple, easy, quick movement of the hand lever.

It also has advantages of its own that are not found in more costly equipment—(1) The lever pressure is regulated at will for either substantial or delicate work; (2) It may also be used with great satisfaction for bar work.



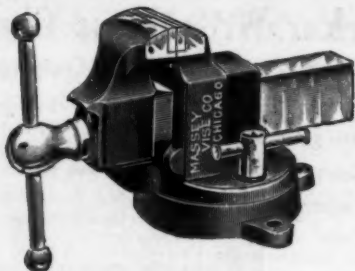
Write
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illustrated
Catalog
which
explains
its
economies
more
fully

BARKER CHUCK DIVISION

THOMAS ELEVATOR CO., MFRS.

22 S. Hoyne Ave.,

Chicago, U. S. A.



Our new No. 18 Catalog just off the press illustrates our complete line of iron and woodworkers' vises. *Write for a copy.* Massey vises are guaranteed to give you the service you have a right to expect from good shop equipment.

Massey Vise Company

549 Washington Blvd.,

Chicago, Ill., U. S. A.



Nestor Vise

Here are its Features:

Work is gripped almost instantaneously—moves from maximum to minimum with quick action sliding jaw.

For size and weight an extraordinary gripping range is provided.

Hole can be drilled at right angles without taking work from vise.

Special provision makes it impossible for jaws to cock up. Immediate delivery.

Write for particulars, sizes and prices

Nestor Manufacturing Co., Inc.

40 W. 13th St., New York City

YOST VISES

For Every Machine Shop Purpose



Solid Jaw, Stationary



Solid Jaw, Swivel Base

shops with every detail perfectly worked out and finished.

We are proud of our vises, because they help every bench man who uses one to do better work. You will be proud of them too, sometime, because their installation in your factory means better and more work every day for you.

Eventually, of course; but why not now?

Yost Manufacturing Co.
Meadville, Pa.

They are vises of reputation, because they are vises of merit—because their nice adaptability to their work makes their use at once a pleasure and an economy.

Scientifically developed to give the greatest holding power, rigidity, ease of manipulation and all-around reliability. The designs are reproduced in our splendidly equipped



Universal Double Swivel



Yost Drill Press Vise

GEM VISE



Drill Vise suitable for the Tool Room and Machine Shop. Write for prices and further description.

Made by

J. E. Martin Tool & Die Co.

548 West State Street,

Springfield, Ohio

The Anderson Ever-Ready Balancing Ways Require No Adjusting

They are unequalled for the easy and accurate balancing of cutter heads, armatures, polishing wheels, aeroplane motors, propellers, crank shafts, cones, pulleys, turbine rotors, etc.

The rotation discs run on ball bearings of special design, and are extremely sensitive. They are made of chilled iron ground true on face, and accurately balanced. Made in several sizes for all requirements.



Worth more than they cost. Want particulars?

Anderson Bros. Mfg. Co.

115 Morgan St., Rockford, Ill.



Users of Terrell's Steel Lockers Take Pride In Their Equipment

You must have some kind of lockers, unless you make your workmen hang their things on exposed hooks or nails. And if you put in any kind of lockers at all, why not get the best while you are at it? It pays.

Not only would you and your workmen take pride in an equipment of Terrell's Steel Lockers, but they make the best investment. There are sightly, sanitary, convenient, reduce fire hazard, save floor space, save repairs, are practically everlasting, and are produced on a basis which permits very close prices.

Glad to figure on your needs without obligating you

Terrell's Equipment Co.

Hall & Division Sts.,

Grand Rapids, Mich.

Portable Millers Cut Costs

The Underwood is Rapid and Accurate



Figure 110

YOU CAN TAKE this tool to the job and fix it up *in place*. Handy and versatile, it is one of the biggest time savers we make. Has power feed in both directions, and is usable in any position, horizontal, vertical or inclined. Operated by hand, small steam engine, air or electric motor.

Railway and general repair shops report a saving of 50% of time in some instances. Figure 110 faces a valve seat 22x40x7 in., or does other milling of similar dimensions. We also build to suit special needs, and we shall be glad to figure on your requirements. No obligation incurred on your part.

Our comprehensive line of Portable Tools includes:

- Millers; circular planer tools; radius planers; rotary planers; machines for truing eccentrics, facing domes, arms for facing cylinder flanges; rotary flue cleaners; armature and axle bearing borers; pipe benders; locomotive cylinder borers; boring bars for lathe work; crank pin turners; reflex water glass grinders, motors, etc.

If interested in economy, send for our Catalog

H. B. Underwood Corporation

1015-25 Hamilton St., Philadelphia, Pa.

Second-Hand Machinery.

Lists of Second-Hand Machinery, either for sale or wanted, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue. Minimum charge, **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. No display in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you require is not listed, use the blank enclosed to make known your wants to the publisher.

FOR SALE BY

George A. Lewthwaite Co., 116 Walker St., New York, N. Y.

SCREW MACHINE.

One No. 12 $\frac{1}{2}$ S. W. Garvin screw machine, 2" wire feed capacity, with collets $\frac{1}{2}$ " to 2" inclusive, used three months, like new, with full equipment.

FOR SALE BY

F. A. Kauffmann Mfg. Co., - 106 S. Second St., St. Louis, Mo.

OIL ENGINE.

Remington upright oil engine, 15 h. p., same as new. Apply at the above address for further particulars.

FOR SALE BY

Swind Machinery Co., Widener Bldg., Philadelphia, Pa.

ROTARY SHEAR—NEW.

Rotary ring and circle shear, capacity No. 10 gauge, circles 10" to 60" diameter, cutters 8".

WANTED BY

Tool Buyer, Care A. H. Hitchcock, 1220 Caxton Bldg., Chicago

I am in the market for the following:

Grinder, No. 60 Heald, 24" cross feed.

Grinder, 6x18 No. 1 $\frac{1}{2}$ plain, self contained.

2 Engine lathes No. 18.

Lathe, No. 18, with carriage and turret, power feed to both.

Miller, Whitney, hand, or equivalent.

FOR SALE BY

The A. R. Williams Machinery Co., - St John, N. B., Canada

Bulldozers, No. 23 and No. 26 Williams & White.

Crane, Shaw, 3-motor $\frac{1}{2}$ ton traveling crane, 80' span, d. c., 230 v.

Engine lathe, 36"x16" C. M. C., triple geared, quick change.

Engine lathe, 27"x16" LeBlond, double back gear, quick change.

Planer, 48"x60"x20' Cleveland open side.

Shears, 1 Pels bevel shear, 1 Pels beam shear.

SECOND-HAND MACHINERY

FOR SALE BY

McCoy-Brandt Machinery Company
Office and Warehouse, 210-218 Penn Ave., Pittsburgh, Pa.

NEW EQUIPMENT.

LATHES.

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| 19"x14' Sidney, q. c., d. b. g. | 16"x 8' South Bend, s. b. g., cone. |
| 19"x12' Sidney, q. c., d. b. g. | 16"x 6' South Bend, s. b. g., cone. |
| 19"x10' Sidney, q. c., d. b. g. | 15"x 6' South Bend, s. b. g., cone. |
| 17"x10' Sidney, q. c., d. b. g. | 13"x 6' South Bend, s. b. g., cone. |
| 15"x10' Sidney, q. c., d. b. g. | 14"x 6' Filsmith, semi-q. c., cone. |
| 15"x 8' Sidney, q. c., s. b. g. | 16"x 6' Filsmith, q. c., d. b. g., cone. |
| 16"x10' South Bend, s. b. g., cone. | 10"x 4' Climax, s. b. g., cone. |

MILLING MACHINES.

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| No. 1 $\frac{1}{2}$ American, geared, plain. | No. 1 Bickett, pl. hand, table 5 $\frac{1}{2}$ "x24". |
| 10"x28" Bristol, vertical, with 13" rotary table. | No. 0 Bickett vertical profiler, table 7"x10". |
| No. 1 U. S. pl., hand, table 6 $\frac{1}{2}$ "x23". | No. 2 Cleveland universal. |

DRILL PRESSES.

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|--|--|
| 25" Weigel, sliding head. | 14" Excelsior, sens., 2 tables, (4). |
| 25" Silver, sliding head, geared, (3). | 10" Burke sen. bench, cap. 5/16", (5). |
| 20" Silver, plain or geared, (18). | 9" Western Chief, bench, 1", (8). |

POWER METAL SAWS.

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|---|--------------------------------|
| Peerless, capacity 12"x16" motor bracket, with speed box. | Peerless, cap. 6"x 6" belted. |
| Peerless, capacity 9x9", belted. | Economy, 6"x 6" belted, No. 2. |
| | Economy, 8"x 8" belted, No. 4. |

ARBOR PRESSES.

- | | |
|---|------------------------------|
| No. 3 Greenerd, (3). | No. 5 Greenerd, with stand. |
| No. 3-A Greenerd, (4). | No. 15 Greenerd, with stand. |
| No. 3 $\frac{1}{2}$ Greenerd, with stands, (3). | |

GRINDERS AND BUFFERS.

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|---------------------------------------|---|
| No. 2 Woods universal tool & cutter. | 14"x4" W. & P. gr. and pol., No. 1 $\frac{1}{2}$ T. |
| 18"x2" Webster & Perks wet tool. | No. 0 W. & P. pol. & bf'ng la's, (3). |
| No. 4 W. & P. polish. & buf. lathe. | 12" Patch, double end, with col. |
| 10" Patch, dble. end, with col., (3). | 18" Patch, double end, with col. |

MISCELLANEOUS.

- | | |
|--|---|
| Hammers, 50 & 100 lb. Little Giant. | Shaper, 28" Queen City, crank, grd. |
| Press, No. 4 Garrison, o. b. i., 3" str. | Shapers, 18", 21" & 24" Hollingsworth, crank, geared. |
| Shaper, 24" Kelly, crank, geared. | |

USED EQUIPMENT.

BOLT CUTTERS.

- | | |
|---|--|
| 3" Acme, double-head, with motor. | 1 $\frac{1}{2}$ " Acme, sgl. hd., pump & pan, (3). |
| 1 $\frac{1}{2}$ " Acme, dble.-hd., oil pump, pan. | Nut tapper, 3-spld. Acme, 1 $\frac{1}{2}$ ", pan. |

DRILLING MACHINES.

- | | |
|--|--|
| Radial, 6' Pond plain. | 20" Baker heavy duty, power feed. |
| Radial, 8' Prentice, gear box, tapping ping attachment, plain. | 24" Colburn hvy. duty, No. 4 Morse. |
| Radial, 36" Drees & Mueller, pl. | 24" Barnes, plain, sliding head. |
| Radial, 36" Bickford, plain. | 24" Cincinnati, pwr fd., sliding hd. |
| Radial, 24" Fosdick, plain. | 28" Back geared, power feed, spdl. 1-3/16" hole. |
| Multiple 8-spindle Foote-Burt. | |

LATHES.

- | | |
|---|--|
| 48" Niles car wheel turning, journal attachment, m. d. | |
| 26" Lodge & Shipley wheel or pulley lathe. | |
| 28"x14" R. M. & C., h. s., c. r., t. a., 24" 4-jaw chuck. | |
| 24"x15" New Haven, h. s., c. r. | |
| 24"x15" Fifeild, solid spindle, plain rest. | |
| 24"x12" S. B. & E., 5" raising blocks, h. s., c. r., 18" 4-jaw chuck. | |
| 18"x8" Lodge & Shipley, q. c. g., d. b. g. | |
| 16"x8" Johnson, s. b. g., c. r., solid spindle. | |
| 16"x 8' Prentice, c. r., h. s., 12" 4-jaw chuck. | |
| 16"x 6' Prentice, h. s., c. r., 12" 4-jaw chuck. | |
| 16"x8" Johnson, s. b. g., c. r., solid spindle. | |
| 16"x 6' R. M. & C., h. s., c. r., 12" 4-jaw chuck. | |
| 16"x 6' LeBlond, h. s., c. r., 12" 4-jaw chuck. | |
| 14"x 8' L. & S., h. s., c. r., 10" 4-jaw chuck. | |

SECOND-HAND MACHINERY

McCoy-Brandt Machinery Company—Continued.

USED EQUIPMENT.

LATHES—TURRET.

1x36" J. & L., bar and ch'g. equip.
1x36" J. & L., bar equipment.
No. 4 W. & S. w. f., 6-hole round turret.
24" Garvin, 6-hole hexagon turret, 12" box chuck.

B. & S. 14" h.s., 7-hole round turret, 9" box chuck.
24"x12" Johnson, 6-hole turret.
16" American Fox, 6-h. turret.
16"x8" Reed, tur. on shears.

GRINDERS.

136" Bridgeport, capwheel, knife.
B. & S. plain, 12x12", auto. feed.
Bath univ. tool & cutter, 14x40".

No. 13 B. & S. universal & tool, auto. feed.
Diamond, knife, 21" wheel.

MILLING MACHINES.

No. 4 Garvin plain, table 8x30".
No. 1 B. & S. plain, hand feed.
No. 3 Cincinnati univ., 12" div. hd., driving mechanism for spiral grs.

No. 3 Cincinnati plain, q. c. g.
No. 3 B. & S. universal, 12" index head, table 10x50".

MOTORS AND GENERATORS.

30 & 20 h. p., 3-60-220 v.
3 h. p., 3-60-220 v.
10 h. p. Fairbanks, 2-60-440 v.
1 h. p., 2-60-220 v., 1800 rev.
10 & 4 1/2 h. p., series wd., 220 v., d. c.

7 1/2 h. p. Triumph, 220 v., d. c., elev. duty
15 & 5 h. p. G. E., 500 v., d. c.
10 h. p. Westg., 500 v., d. c., 1250 rev.
12 1/2 k. w. G. E., 125 v., d. c., 1500 rev.
50 k. v. a. Lincoln, 3-60-220 v.

PRESSES AND BRAKES.

No. 26 Niagara, arch. 2 1/2" str., 3200 lbs.
Perkins punch, 3" stroke, 4,500 lbs.
No. 4 Stiles, 1 1/2" str., 5,000 lbs., pl.
No. 65 Spe'l Toledo (cam) 7 & 4" str.
Punch press, Bliss geared, 8,500 lbs.
No. 64-A Perkins sgl. cr. grd., 3" str.

Consolidated, geared, 4" stroke.
Waterbury Farrell, geared, str. 8".
12" 6" Garrison brake or press, cap. 1/2", weight 113,000 lbs.
8" Robison hand brake, cap. 16 ga.

PUMPS.

24"x24" Deane deep well. 25 g. p. m. for motor drive.

24"x10" Deane triplex, belted.
7 1/2x10" Hall, duplex, steam.

PUNCHES, SHEARS AND ROLLS.

15" throat, sgle., cap. 1 1/2" arch jaw.
18" throat, double, capacity 1 1/2x1", Williams-White No. 13.
14" throat, double, capacity 2 1/2x1 1/2", No. 11 Williams-White.
36" thrt., sgl., cap. 1 1/2x1" Cincinnati.
Guillotine shear, capacity 1 1/2" rounds, Hilles & Jones.
Guillotine shear, No. 3 Wilder, cap. 1, 1 1/2" stroke.
Guillotine shear, No. 3 Cleveland, 3 1/2" stroke, capacity 2" sq.

Guillotine shear, No. 5 Cleveland, 3" stroke, capacity 2 1/2" sq.
Guillotine shear, Cleveland, 3" stroke, capacity, 3" square.
Slitting shear, rotary, 23" throat, capacity 1 1/2", Newbold.
Slitting shear, rotary, 8" throat, cap. 3/16"; 15" throat, cap. 1/2".
Bevel shear, Thompson, rated cap. 1/2".
Squaring shear, 108", capacity 1 1/2".
Squaring shear, 26" pwr., cap. 16 ga.
Rolls, 10" Bertsch, cap. 14" gauge.

SHAPERS AND PLANERS.

24" Cincinnati, crank, b. g., vise.
24" Queen City, crank, b. g., vise.

30"x30"x8" Gray, 1 head.
30"x20"x10" American, 1 head.

STEAM HAMMERS.

1000 lb. N.-B.-P. dble. frame, (4).
700 lb. N.-B.-P. dble. frame, (6).

700 lb. Pittsburgh, dble. frame, (3).
600 lb. Morgan, double frame, (7).

MISCELLANEOUS.

Arbor press, No. 5 Greenerd.
Boring mill, No. 1 Sellers horizontal, 24" bar.
Bulldozer, No. 5, 6 & 7 W.-W.
Chucks, lathe and miller, new.
Compressors, 9x5x10" Westinghouse steam, (2).
Cutting-off mche., 8" Brightman.
Gear planer, 12" Gleason.
Hoist, No. 3 Canton, floor type.
Pipe machine, 4" Williams, cutting-off tool, dies.

Keyseater, No. 1 Davis, capacity 1".
Pipe mche., 8" Jarecki, dies, eng. dr.
Pipe machine., 12" Curtis & Curtis, engine driven.
Riveter, 1/2" Shuster.
Seamer, 30" dbl. P. S. & W., hand.
Slotter, New York Steam Engine, 26" rotary table, 12" stroke.
Thread roller, 1/2" Waterbury-Farrell, with dies.
Tooth rounder, 13" Ingle.

SECOND-HAND MACHINERY

FOR SALE BY

Federal Machinery Sales Company,
10 N. Jefferson St., Chicago, Ill. 212 Sycamore St., Milwaukee, Wis.

USED and NEW Tools.—Immediate shipment.

DRILLING MACHINES.

- New Champion 14" plain lever feed upright drill.
- New Silver 20" stationary head drills, (6).
- New Hofer 24" sliding head drill, b. g., p. f.
- New Snyder 28" sliding head drill, b. g., p. f.
- New Cleveland 36" sliding head drill, b. g., p. f.
- Used 3-spindle Reed sensitive drill.
- New Henry & Wright 1 2 3, 4 and 6-spindle ball bearing drills, (30).
- Used 24" Drees plain radial drill.
- * Used 5" Bickford full universal radial, a. p., gear box drive.

GEAR SHAPERS.

Used 24" Fellows.

Used 36" Fellows.

GRINDERS.

- New No. 1 Grand Rapids universal cutter and tool.
- New No. 2 Gardner ball bearing disc grinder.
- New Oakley No. 2 universal cutter grinders, (2).
- New Ohio No. 2 universal cutter grinders, (2).
- Used Saxon horizontal surface grinder, table 36"x12".
- Used Pratt & Whitney 6"x48" plain grinder.

LATHES.

- New Dalton type B-4, 6"x36" bench lathes on legs, (6).
- New Monarch 14"x6" standard engine lathes, (3).
- New Monarch 16"x6" standard engine lathes, (3).
- New Oliver 16"x7" q. c. g. engine lathe.
- Used Flather 17"x6" q. c. g. engine lathe.
- New National 17"x6" q. c. g. engine lathe.
- New National 17"x8" q. c. g. engine lathes, (2).
- Used Schumacher-Boye-Emmes 18"x6" standard engine lathe.
- New 18"x6" Hollingsworth standard engine lathe.
- New 18"x8" Hollingsworth standard engine lathes, one with taper, (2).
- New National 18"x8" quick change gear engine lathes, (4).
- Used Lodge & Davis 18"x8" standard engine lathe.
- New Greaves-Klusman 18"x8" q. c. g. engine lathe.
- New Monarch 18"x10" standard engine lathes, (2).
- Used Mueller 18"x10" standard engine lathe.
- Used 19"x10" Lodge & Davis engine lathe.
- New Monarch 20"x10" standard engine lathes, (3).
- Used 36" pulley lathe.
- Used New Haven 60"x20" bed triple geared eng., with raising blocks to 79 1/2".

MILLING MACHINES.

- New No. 6 Bristol, hand, 2 with oil system, (7).
- New No. 1 Bristol, hand, (3).
- New No. 2 Bristol, hand, b. g.
- Used No. 2 Cincinnati plain.
- Used No. 2 Carter & Hakes Lincoln miller.
- New No. 3 Kempsmith universal.

PLANERS.

- Used Enterprise 30"x30"x6", 1 head.
- Used Gray 24"x24"x5", one head.

PIPE MACHINES.

- Used Bignall & Keeler 2".
- Used Victor 4".

PRESSES.

- New Nos. 18, 19, 20, 21 and 21-B Bliss, o. b. i., (11).
- New Style C-3 Ferracute open back inclinable, (3).

SHEARS.

- New Peck, Stow & Wilcox No. 137-A, a foot power squaring shear.
- New Peck, Stow & Wilcox No. 223, 52" power squaring shr., for 14 gauge.
- Used Ohl 10" power squaring shear, 12 gauge.

SCREW MACHINES AND TURRET LATHES.

- Used Bridgeport 20"x8" turret lathe.
- New No. 4 Southworth plain head screw machine, 1 1/2".
- Used 3"x36" Jones & Lamson, arranged exclusively for chucking, (3).

SHAPERS.

- New Barker 16", b. g. crank.
- Used Juergat 24", crank.
- New Ohio 24", b. g. crank.

SECOND-HAND MACHINERY

Federal Machinery Sales Company—Continued.

MISCELLANEOUS.

Boring mill, used 40" King vertical, 2 heads.
Cold saw, used No. 3 Burr.
Die filer, new Handy, motor driven, 110 v., d. c.
Hammer, used Williams & White 35-lb.
Keyseater, used No. 1 Mitts & Merrill.
Riveter, new No. 3-A high speed, 3" capacity.
The above list is incomplete. Write us, giving specifications of anything required.

FOR SALE BY

The Enterprise Machinery Co.,

28-30 S. Clinton St., Chicago

Boilers, 10 to 150 h. p.
Brake, 8' 2-16" power, D. & K.
Compressors, 10 to 1000 ft. and ptbl.
Disc grinders, 18" and 30" Besly.
Drills, 3-sp. and 4 sp. Dwight S.
Engines, gas or oil, 3 to 60 h. p.
Engines, steam, 5 to 250 h. p.
Pumps, 10 to 1000 gal. pr. m.
Hammer, Morgan, 1000 lb.
Lathe, 30"x12", compound rest, \$295.
Lathe, 36"x16" hvy. duty, trip. b. g.

Lathe, 64"x18", triple geared.
Miller, hvy., No. 3 and vert. att.
Pipe cutters, 2" and 4".
Planers, 24", 30", 36" and 42".
Planer, 96"x18", 4 heads.
Punch press, Nos. 2 and 3.
Radial, 42" No. 5, taper, good cond.
Roll, 4" cap., 16", belt drive.
Screw machine, auto., 5/16", \$375.
Shear, Niagara, 36" 10 gauge.
500 Other tools. Write for list.

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

14"x 6' Blaisdell, r. & f. rest.
14"x 6' Flather, p. r.
18"x10' Springfield, c. r., 5-step cone.
18"x10' LeBlond, c. r. & t. a., 5-step cone, (3).

16"x 6' Goddard, r. & f. rest.
14"x 6' Flather, c. r., 4-step cone.
23"x12' Walker, p. r., with raising blocks.

TURRET LATHES.

24" Davis turret boring & chucking lathe, with vert. forming attach.

14" Lodge & Davis, plain head.

SCREW MACHINES.

No. 60 Brown & Sharpe automatic.
No. 33 New Britain multiple spindle automatic.

7" Hartford full automatic.
4" Pratt & Whitney screw machine complete.

GRINDERS.

Warner & Swasey cock grinder.
Type "DE" Hisey-Wolf internal.

Greenfield univ. cutter & reamer.
20" Whitney wet tool.

HAMMERS.

Coffman, post, power dr., 25 lbs., c. s.

100 lb. Cady, belt drop, c. s.

GEAR CUTTERS.

No. 2 Whiton automatic.
36" No. 3 Brown & Sharpe auto.

36" Fellows gear shaper.

KEYSEATERS.

Mitts & Merrill, square frame.

No. 2 Mitts & Merrill.

MISCELLANEOUS.

Arbor press, No. 2 Greenerd.
Cold saws, 12" Burke, (4).
Cold saw, Higley.
Drill, 5 spdl. Detroit semi-auto.
Drill, sgl. spdl. Leland, ball bearing.
Filing machine, Simplex.
Lathe, Resek, double end.
Punch, foot power.
Punch press, No. 20 Bliss plain fly-wheel.

Saw sharpener, No. 10 Cochrane-Bly automatic.
Shears, 30" Niagara foot-power squaring.
Shear, 62" Niagara No. 363 power squaring.
Shear, No. 183 P. S. & W. power squaring.
Welder, No. 4-A 110 volt Federal.

SECOND-HAND MACHINERY

FOR SALE BY

Cyril J. Bath & Co.,

721 St. Clair Ave., N. E., Cleveland, O.

Stock now on hand.

AUTOMATICS.

No. 6 Potter & Johnston chucking lathe, late model, good condition.

7"x14" P. & J. large arm automatic chucking, very fine shape, low priced.

No. 33 New Britain auto. chucking machines, five stations and tapping spindle. handle work up to 2 1/2" diameter in chuck jaws and 5 1/2" swing outside chucks, very good, (3).

BAR STOCK MACHINES

No. 4 Warner & Swasey screw machine, wire feed, friction back grd., power feed to turret, large equipment, collets and round turret, good.

17" Universal 8-spd. automatics with large equipment, good condition, (2).

48"x30" Bardons & Oliver, with all geared head, motor driven, with motor, capacity up to 4 13-16" stock, large equipment, excellent condition.

BORING MILLS.

30" Bullard vertical, belt feed, excellent condition.

34" Colburn, 3-jaw chuck built on table.

42" Bullard, double swivel head, rapid production type, good condition.

51" Niles double swivel head with 4-face plate jaws, friction feed, table and all parts in fine shape.

4-spd. Foote-Burt vert. cylinder boring mch. with sp. adj. in pairs 4" fixed centers, 5" min. adj. bet. inside spds.; cone dr., table fd.; excellent shape.

2-B-2 1/2" Binsse horizontal, 2 1/2" bar, knee type, cross carriage 36x18.

BULLDOZERS

No. 5 Ajax stroke 18", cross head 9x34.

Ajax No. 7 hi-speed, steel bed, 16" stroke, late model, ram face 6' 4"x12", gearing ratio 16: 1, 30 strokes per min., double geared; fine, with motor.

DRILLING MACHINES.

2-Spindle 14" Henry & Wright sens. ball bearing drill; table 17"x12".

3' Fosdick plain radial, cone drive, gear feed, very good.

No. 11 Natco 8-spindle multiple drill; can be used with 10 spindles; max. drilling area 12"x1"; min. 4"x4" belt feed, fine shape.

GEAR CUTTER.

No. 3-26" Brown & Sharpe plain, with all parts; very good condition.

GRINDERS.

Bristol 18" vertical round surface grinder.

Landis No. 23 plain, 1"x42", with heads if desired, for crankshaft grinding; good condition.

No. 60 Heald cylinder grinder, very good condition.

No. 3 Landis universal; takes 12x42.

Modern internal grinders, (3).

No. 13 and No. 18 Bryant internal; latter swings to 18".

LATHES.

Libby turret lathes, 7 1/2" hole in spindle, 6-hole turret, used two months.

13x4' South Bend, milling attachment.

14"x6' Prentiss, comp., one chuck, loose change gears; very good.

24"x10' American production lathe, good condition.

24"x11' Johnson, gear fd., comp. r., hollow spindle, complete; good condition.

24" Gisholt turret, late model, motor dr., t. a., large equip., very fine cond.

MILLERS.

No. 60 Brown & Sharpe plain hand miller; good.

No. 6 Whitney plain hand miller; good.

PLANERS.

24"x24"x5' Putnam, single head, light model; good shape.

36"x36"x14' Pond, single hd., in good condition, with table 6" thick, no broken T slots or pegged gears; a good rugged tool, fine condition.

PRESSES.

No. 2 Waterbury Farrell rack and pinion press, 25" stroke, weight about 7,500 lbs.; very good condition.

N^{ia} gara No. 4, No. 5 & No. 6 inclinable presses, standard; all new.

SAWS.

No. 3 Ryerson friction saw, motor dr. and feed cap. for 24" beams or equal, 45-90 h. p. motor, weight about 12,000 lbs.; 220 volt, 60 cycle, 3 phase motor.

6" and 9" Peerless high speed saws in stock; new.

SECOND-HAND MACHINERY

Cyril J. Bath & Co.—Continued.

MISCELLANEOUS.

Bolt cutter, No. 7 Jarecki; very good.
 Broach, No. 3 Lapointe.
 Gear testing machine, Brown & Sharpe.
 Miller, Lees-Bradner, spindle 6" in diameter.
 Running balance machines, Norton, for balancing crankshafts, armatures, and similar running parts, almost new and motor driven, (2).

FOR SALE BY

Badger-Packard Mch. Co., 133-139 W. Water St., Milwaukee, Wis.

LATHES.

14"x8' American, standard, s. b. g., 4-step cone.	16"x8' Fifield, loose chg., s. b. g., 4-st. c.
16"x8' Flatther, quick change.	18"x10' Blaisdell, c. r., solid spdl.
18"x8' Cincinnati, quick ch., s. b. g., 4-step cone.	21" Gisholt turret lathe.
	24" Pond rigid turret lathe.

MISCELLANEOUS.

Blower, No. 50 Connorsville positive pressure, with t. and l. pulleys.	Oven furnace, No. 1 Stewart, with blower.
Grinder, No. 2 B. & S. univ. cyl.	Oven furnace, No. 27 Stewart, with- out blower.
Grinder, 73" Holmes auto. knife.	Punch, style M Badger rapid action, 6" throat, 3"x3 1/2" cap.
Grinder, 12"x42" No. 3 Landis univ.	Rivet spinning machine, Grant, 110 v., d. c. motor driven, 3/16" cap.
Grinder, No. 3 Oesterlein "Ohio" universal and tool.	Screw mch., 3"x3 1/2" Hartford auto.
Hammer, drop, 100 lbs.	Screw machine, 1 1/2" Cleveland auto.
Keyseater, No. 2 Mitts & Merrill "Giant," with equipment.	Screw mch., 2 1/2"x4 1/2" Hartford auto., with c. s.
Milling mch., No. 6 Brainard, Lin- coln type, pwr. longitudinal feed.	Screw mch., 1 1/2"x17" Hartford auto.
Milling machine, No. 3 Burke, hand, with countershaft.	Shaper, 14" Lutter & Gies, with c. s.
Planer, 24"x24"x16" Fitchburg.	

FOR SALE BY

E. L. Esley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.

DRILL PRESSES.

12" Rockford upright.	28" Aurora, sliding head.
No. 2 1/2 Avey single spindle.	No. 11 Natco multiple drills, (2).

GRINDERS.

No. 1 Cincinnati, universal.	6"x32" Norton plain.
No. 1 Norton full univ. tool & cutter.	No. 2 Bath universal.
12"x24" Modern self contained, plain.	No. 1 Bealy disc.

LATHES.

11"x 8' Star.	20"x 8' Hamilton.
13"x 6' Sebastian.	22"x12' Greaves & Klusman.
16"x 8' Von Wyck, taper att.	24"x12' Prentice Bros.
16"x 8' Bradford, q. c. g., taper att.	36"x14' Bradford.

SCREW MACHINES.

No. 00 Brown & Sharpe auto. (2).	1"x4" Acme, plain head.
1" Cleveland automatics, (2).	No. 4 Foster, plain head.
No. 5 Pearson, hand, fric. head.	No. 22 1/2 Garvin, 17-16" cap., fric. hd.
No. 1 Foster, plain head, cap. 13-16".	1" Smurr & Kamen, plain head.

MISCELLANEOUS.

Air comp., 6x8 Curtis, Model "A".	Gear hobber, No. 3 Barber-Col., (5).
Bolt cutter, 3-spindle 1" National.	Miller, vert. No. 4 Becker-Brainerd.
Boring mach., 3 1/2" Binsse horizontal.	Miller, No. 1-B K. & T. univ.
Boring mill, 36" Bullard.	Planer, 42"x42"x8" Whitcomb.
Boring mach., No. 0 Fosdick.	Punch, No. 16C New Doty, agl. end.
Cold saw, No. 11 1/2 Higley.	Punch press, No. 76 Toledo, o. b.
Gear cutter, No. 12 B. & S. auto.	Turret lathe, 3"x34" J. & L.

SECOND-HAND MACHINERY

FOR SALE BY

Russell Machine Company, 28th St. & A. V. R. R., Pittsburgh, Pa.
LATHES.

48" Niles car wheel, m. d.
48"x16" turning lathe, c. r., sgl. gd.
46"x21'6" Fifield, triple geared.
38"x25' New Haven, raised to 56".
24"x16' 8" Johnson lathe.
20"x12' Prentice, h. s., c. r.

18"x 8' Lodge & Shipley, q. c. g.
16"x10' Sebastian, h. s., c. r.
16"x 6' Blaisdell, h. s., c. r.
14"x 5' American speed lathe.
16"x 5' Jones-Lamson turret lathe.
34"x11' American semi-auto. turret.

PLANERS.

34"x24"x6' Lodge & Davis, 1 head.
24"x24"x8' Chandler, one head.
30"x30"x10' American, one head.

48"x48"x20' Gray, 4 heads.
72"x48"x16' Pond, 2 heads.
80"x72"x20' Thurston-Gardner, 1 hd.

DRILLS AND BORING MILLS.

Burke sensitive bench Nos. 6 & 1.
14" Woodward-R. sensitive bench.
No. 3 Prentice port. rope drive drills.
No. 22 Silver, new, h. p. post.
20" Silver, new, plain and bk. gd.
20" Foote-Burt mfrs. vertical.
24" New Haven plain drill.

24" Hamilton, b. g., sliding head.
30" Hamilton, b. g., sliding head.
36" Gould & Eberhardt, tap. attach.
4' Fosdick plain radial, tap. attach.
4 1/2' Bickford plain radial, tap. attach.
Garvin 4 spindle drill press.
48" Niles car wheel boring mill.

HAMMERS, BULLDOZERS AND MILLERS.

7000 lb. Morgan double leg steam hammer.
1100 lb. Morgan single leg steam.

No. 2 Brown & Sharpe plain miller.
Williams-White bulldozers, Nos. 8 and 6.

ENGINES, BOILERS AND PUMPS.

5"x5" Erie vertical steam engine.
5"x8" Lane horizontal steam engine.
4 h. p. Fowler vertical gas engine.
40 h. p. Backus gas engine.

50 h. p. White-Middleton gas engine.
50 h. p. vert. submerged tub. boiler.
6 h. p. vertical single flue boiler, (4).
Pumps, various sizes and makes.

PUNCHES, SHEARS AND PRESSES.

50" throat Reade sgl. end punch and shear; massive construction.
No. 8 L. & A. geared s. e. punch, 3 1/2" throat.
Industrial d. e. punch and shear, 12" throat.
No. 1-O Doty punch and shear, b. d., 9" throat.
Peck, Stow & Wilcox squaring shear, foot pwr., cap. 16 gauge, 32" knife.

Niagara No. 24 hand punch, 15" thr.
Bliss geared slitting shear, 18" thr.
Perkins No. 3 rotary shear, 12" thr.
No. 86 double housing knuckle joint press.
No. 24 Greenerd arbor press.
No. 4 Stevenson foot pwr. press, 6" throat.
No. 20 1/2 Toledo drawing presses, (1).

MISCELLANEOUS.

Air compressor, s. cyl. 3x5", belted.
Air compressor, double cyl. 2 1/2"x4", belted.
Air compressor, Gardner vertical, 4 1/2"x4 1/2", b. d.
Air compressor, 6x6 Laidlaw-Dunn-Gordon horizontal.
Air compressor, 8 1/2' Blaisdell single cyl. horizontal.
Belting, various widths and lengths, leather.
Blower, pressure, No. 6 Sturtevant, 3 1/2" outlet.
Blower, pressure, No. 3 Sturtevant, 9" outlet.
Bolt cutter, 14" Kenyon.
Chain block. Rounds 1-ton.
Cold saw, Gliem, 22" dia., cap. 6" rd.
Cold saw, Newton, 20" dia., cap. 5 1/2" rd.
Crane, 10" I-beam, 12' span, with Harrington 6,000 lb. chain hoist.

Crane, traveling, 10 ton Pawling & Harnischfeger, 3 motor, 60' span, 220 v., d. c.
Grinder, Landis, 26"x96".
Grinder, 10" double end emery, m column.
Grinder, Diamond 12" d. end bench.
Grinder, Russell 12" dbl. end bench.
Grinder, Lancaster 16" d. e. emery.
Grinder, Barnes 20" wet tool.
Grinder, 20" Ransom wet tool, 200 volt. d. c.
Keyseater, 18"x3", No. 2 Baker.
Lathe, wood, 18"x5' Chapman.
Motor, 5 h. p. Peerless, 550 volts, d.c.
Pipe mch., 6" Curtis, engine driven.
Polishing stand, Diamond No. 2.
Polishing stand, d. end, 42"x3" arbor.
Polishing stand, Cuyahoga dbl. end.
Rip and cut-off saw, 30"x38" Badger.
Silent chain belt, 16"x8"x1 1/4" p.
Vises, Forges, Tanks, Lockers.

SECOND-HAND MACHINERY

FOR SALE BY

Simmons Machine Co., Inc., Albany, N. Y.
1001 Singer Bldg., New York **358 Ellicott Square, Buffalo**
#04 Dime Savings Bank Bldg., Detroit

Partial List of Equipment for Immediate Delivery

MILLERS.

No. 2 Owen plain.	No. 3-B Owen plain.
No. 3-H LeBlond universal, new.	No. 1½ Cincinnati, plain.

GRINDERS.

No. 5 Brown-Sharpe universal.	No. 3, 4, 5, self-contained c. s. new, (2).
No. 23 Brown-Sharpe internal.	Springfield wet grinder.
No. 2 Norton universal tool-cutter.	¾", 1", 1½" and 1¾" emery stand.
Dumore electric, new, (8).	

LATHES.

14"x 5' Putnam.	20"x 12' Boye & Emmes.
14"x 6' Lodge-Shibley.	30" English lathe.
18"x 6' American.	34"x 16" Pond.
20"x 8' American.	38"x 14' David W. Pond.
20"x 8' Fitchburg.	42"x 12' Fifield, triple geared, (3).
20"x 8' Pond.	24"x 26" Marvel lathes, (2).
20"x 10' Monarch, new.	

PLANERS.

Used 28"x 36"x 8' 6" Planer, one rail head, one side head.
 Reliabuilt 30"x 33"x 10 Cincinnati, one head.
 New 42"x 42"x 12' openside, one rail head, one side head.
 Reliabuilt 60"x 48"x 13' Lincoln, 4 heads, Sellers spiral gear drive.
 Reliabuilt 66"x 52"x 13' 6 planer, two heads.
 Reliabuilt 73"x 48"x 13' Lincoln, 4 heads, Sellers spiral gear drive.
 Used 14' Hilles-Jones plane planer.

DRILLING MACHINES.

Moline "Hole Hog", (3).	U. S. portable electric radial.
3' Drees plain radial.	No. 36-20" Canedy-Otto stationary
26" Snyder.	head, new.
7' 3" Warren semi-universal radial.	14" Sensitive drills, (2).
3-spindle Sipp high speed sensitive.	No. 101 Canedy-Otto 3½" radial, new.
26" Barnes, sliding head, (3).	No. 1 Burke bench drills, new, (3).

AUTOMATICS.

2" Cleveland Model "A" 5-hole turret (2).	4" National Acme auto., four spdl.
2" Cleveland auto., 5-hole turret, (3).	No. 55 National Acme auto., (2).
	No. 52 National Acme automatic.

SCREW MACHINES AND TURRET LATHES.

3"x 36" J. & L., bar and chuck., (2).	20"x 8' Bridgeport turret lathe.
No. 32½ Garvin turret lathes, (4).	Conradson turret lathe, 24" swing.

BORING MILLS.

37" Niles.	Bement horizontal, 2½" bar.
34" King vertical, swing 36".	48" Niles car wheel borer.

MISCELLANEOUS.

Arbor press, Greenerd No. 5.	Presses, power, Nos. 1, 2, 3 Sidney,
Broaching mch., No. 2 J. N. Lapointe.	new, (2).
Dictaphones—Ediphones (5), and 1	Presses, foot, Perkins, (2).
shaving machine with motor.	Saw, 4" Cochrane-Bly.
Gear cutter, No. 2 Whiton.	Shear, Lennox rotary bevel.
Hack saws, No. 1 Racine hi-spd., (8).	Shear, 36" Q. C. power squaring.
Pipe machine, 2" Jarecki No. 7.	Shear and punch, 24" Niagara deep
Pipe machine, 8" Cox.	throat, hand lever.
Press, No. 3-W Bliss.	Time clocks, International, (3).

WOOD-WORKING MACHINERY.

Band saw, 36".	Sander, vertical.
Borer, universal.	Sander, 3-roll drum, Fay & Egan.
Jointer, 16" Greaves-Klusman.	Shaper, 2 spindle.
Planer, pony, 24".	Swing saw.
Router, New Britain No. 2 chain.	

SECOND-HAND MACHINERY

FOR SALE BY

Chas. Molitor Machinery Co., 124 S. Clinton St., Chicago, Ill.

Special Bargains

Corrugating machine, 10'.	Radial, 42" Mueller.
Grinder, No. 2 Brown & S. auto.	Shaper, 15" Niles, crank.
Lathe, 22"x10' American, quick ch.	Shaper, 25" Milwaukee, b. g.
Miller, No. 2 Brown & Sharpe, pl.	Shear, 8"x10', power square, 10 g.
Miller, No. 3 Brown & Sharpe, pl.	Spot welder, Toledo, 250 amp.

FOR SALE BY

H. C. Williamson, 321-323 N. Crawford Ave., Chicago, Ill.

Cutter grinder, P. & W. \$ 175.	Pipe machine, 2" \$ 75
Drill, 20" 65	Pipe machine, 4" 80
Gas furnace and blower 70	Planer, 24" new 950
Lathe, 11" 160	Planer, 30"x8' 800
Lathe, 14"x8' Prentice 275	Punch press, No. 3 75
Lathe, 14"x8' Flatner 225	Shaper, 24" crank 300
Lathe, 16" with turret 150	50 h. s. adjustable reamers, for cylinders 3/4 to 6 1/2
Lathe, 21" American 650	20-5" h. s. cutters 600
Lathe, 24" Putnam 600	40,000 Carriage bolts 400
Lathe, 36"x16' triple geared 1600	High speed drills 100
Miller, hand 130	\$30,000 worth of screw machine tools
Miller, vertical 150	Adj. facing mills, hollow mills.
Millers, Lincoln, (6)	
Millers, small rotary, (10)	

FOR SALE BY

Frank Toomey, Inc., 127-131 N. Third St., Philadelphia, Pa.

LATHES.

13"x 7'6" new Carroll-J., pln. chg.	18"x 6' Robbins.
14"x 6' new Carroll-Jamieson, q. c.	19"x 8' new Sidney, q. c., swings 21"
15"x 6' new Sidney, q. c., swings 17"	20"x12' Hendy, q. c., taper attach
16"x 8' Hendy, q. c., taper attach	23"x14' new Sidney, q. c., swings 27"
16"x24' new Rahn Larmon, d. b. g., q. c.	28"/45"x13' Harrington extension.
17"x 8' new Sidney, q. c., swings 19"	

TURRET LATHES.

2"x24" Jones & Lamson, cone head, complete.	24" Davis chucking.
	No. 1 Bardous & Oliver, screw.

VERTICAL BORING MILLS

60" Bullard, two heads.	64" Niles, two heads.
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PLANERS.

36"x36"x 8' Gray, two heads.	27"x23"x 6' Smith, one head.
30"x27"x 8' Smith, one head.	18"x 8"x 3' Wheeler, one head.

SHAPERS.

16" new Steptoe, b. g.	24" Hendy.
20" new Steptoe, b. g.	16" Bement, traveling head.
24" new Steptoe, b. g.	16" Barker, traveling head.

MILLING MACHINES

No. 4 Brown & Sharpe, plain.	No. 1 1/2 new American plain.
No. 3 Cincinnati universal.	No. 0 Steptoe, hand. new.
24"x7"x18 Oesterlein, plain.	No. 2 Burke, bench. p. f.

GRINDERS

No. 1 Fraser universal, new.	No. 1 Landis internal.
No. 1 Grand Rapids, new cutter and reamer.	No. 190 Wells.

BELT HAMMERS.

25 lb. new Little Giant, (2).	100 lb new Little Giant, (3).
50 lb. new Little Giant, (3).	

SECOND-HAND MACHINERY

FOR SALE BY

W. J. Baird Machinery Co., 265 Jefferson Ave., Detroit, Mich.

Desirable Tools for Immediate Delivery

DRILL PRESSES.

- 10" Aurora, sliding head, b. g., power feed, s. h.
- 8" Silver, power feed, b. g., new, (4)
- 8" Silver, wheel and lever feed, new, (6).
- 8" plain Canedy-Otto, wheel and lever feed, new, (4).
- Prentiss cone driven radial, used.
- 2-spindle Demco h. s. ball bearing, floor type, new.
- Single spindle Demco ball bearing, bench type, new.
- 2-spindle Demco h. s. ball bearing, floor type, new.
- Lindgren 15" gear driven sensitive, new, (2).
- U. S. sensitive, sliding head, tilting table, (4).
- 10" Excelsior, plain wheel and lever feed, automatic stop, (2).

GRINDERS.

- No. 2 Bath universal, complete with regular equipment, s. h., good condition.
- No. 1 Wilmarth & Mormon univ. cutter and reamer, power feed, new, (4).
- No. 1 Wilmarth & Mormon cutter and reamer, hand feed, new, (4).
- No. 2 Wilmarth & Mormon automatic surface grinders, new, (2).
- No. 1 LaSalle surface grinders, new, (3).
- No. 1 Fraser universal, complete with internal grinding attachment, new.
- New 15" No. 7 Valley City double end disc grinder.

SCREW MACHINES.

- 10" 5-hole turret Cleveland automatic, used.
- No. 5 Foster, geared head, single pulley drive, used.
- 4" Star hand screw machine, used.
- 10" National Acme 4-spindle automatic, new.

MILLING MACHINES.

- No. 2 Van Norman duplex, new, (2).
- No. 1 Rockford plain, cone type, new.
- No. 2B Rockford universal, cone type, complete with regular equipment, new.
- No. 2 plain h. d. cone type Rockford, new.
- No. 2 universal high power all-geared Rockford, new.
- No. 2 universal high power all-geared Rockford, new.
- Lambert horizontal all-geared, 3" bar, new.
- U. S. hand miller, new.

PUNCH PRESSES.

- No. 1 V. K. V. inclinable.
- No. 3 Loshbough Jordan open back inclinable, new.
- No. 4 Loshbough Jordan open back inclinable, new.
- No. 5 Loshbough Jordan geared open back inclinable, new.
- No. 2 Moore screw press.

SHAPERS.

- 10" Milwaukee back geared crank shapers, new, (2).
- Columbia 20" b. g. crank shaper, new.
- Queen City crank shapers, b. g., new, (3).
- Hollingsworth crank shaper, b. g., new.
- No. 163 Rhodes combination vertical and horizontal crank shaper.

PLANERS.

- 8"x22"x 5' Wheeler planer, s. h., fine condition.
- 8"x12"x10' Davis & Egan planer, used.
- 8"x10"x 8' Gray planer, used.
- 8"x16"x20' Gray planer, used.
- 8"x10"x20' Cleveland open-side planer, used.

PUNCHES, SHEARS AND ROLLS.

- New 20" Pettengill rotary shears.
- Set 18" Hillis Jones bending rolls, used.
- Set 36" Niagara pyramid type bending roll.
- Set 20" Niles plate bending rolls, used.
- Sets Pettengill forming rolls, new, (2).

SECOND-HAND MACHINERY

FOR SALE BY

H. D. Warner,

57 May St., Hartford, Conn.

Automatics, No. 00 B. & S., (6).
Automatics, No. 0 B. & S., (6).
Automatics, No. 2 B. & S., (6).
Automatic, 14" Cleveland.
Automatics, 34" Cleveland, (2).
Automatic, 14" Gridley mult. spdl.
Grinder, No. 2 Landis universal.
Hammer, steam, 600 lb. Niles-Bement-Pond, nearly new.
Hammer, steam, 1,000 lb. Niles-Bement-Pond, nearly new.
Hammers, steam, 1,300 lb. Niles-Bement-Pond, nearly new, (2).
Hammers, board lift drop, 400 lb. Billings & Spencer, nearly new, (6).
Hammers, board lift drop, 600 lb. Billings & Spencer, nearly new, (7).

Hammers, board lift drop, 600 lb. Billings & Spencer, nearly new, (4).
Hammer, automatic drop, 200 lb. Standard.
Header, No. 00 Manville, s. s., a. d., nearly new.
Header, No. 00 Manville, d. a., a. d., nearly new.
Headers, No. 2 Manville, s. s., a. d., nearly new, (2).
Millers, Becker No. 7-H Lincoln, (4).
Millers, P. & W. No. 2 Lincoln, (4).
Millers, No. 2 Becker vertical, (6).
Press, No. 779 Bliss.
Press No. 798 Bliss.
Press, embossing, No. 26 Bliss.
Press, embossing, No. 27 Bliss.

FOR SALE BY

The Osborne & Sexton Machinery Co.,

Columbus, Ohio

LATHES.

9" to 13" Barnes, h. s., cp. r., new.
13-15-16 and 18 O. & S., h. s., c. r., new.
13" x 8" LeBlond, hollow spindle.
14" x 6" Hamilton, h. s., comp. rest.
18" x 8" Fitchburg, hol. spdl., cp. r.

19" x 12" Gray, compound rest.
20" x 10" Hamilton, double back gen.
21" x 10" and 24" x 12" South Bend.
25" x 24" Fifeild.
54" x 18" Pond, old style.

TURRET LATHES AND SCREW MACHINES.

1" Garvin hand screw machine.
14" S. & K. hand screw mches., (3).
14" Tilted turret hand screw mche.

No. 6 W. & S. screw machine.
2x24 & 3x36 J. & L., dbl. equipment.
8" Hartford single spindle auto.

SHAPERS AND PLANERS.

14" Niles, traveling head.
16, 18 & 24" Barker, back gear crank.
20" Walcott geared shaper.
22" x 22" x 6" Gray, 1 head.

24" x 24" x 8" American, 1 head.
32" x 32" x 10" Niles, single head.
36" x 36" x 16" Pond, single head.
60" x 60" x 15" Betts, 3 heads.

PRESSES.

No. 5 Garrison, o. b. i.
No. 2 Sidney o. b. inclinable, 1600 lb.
No. 4 Toledo, o. b. inclinable.
No. 32-P Toledo, nearly new, (5).

Pneumatic, 20 ton, 37" bet. uprights.
Perkins, dbl. crank, 16x24 bolster.
Bliss, 42,000 lbs. toggle drawing.
Covington, 10' 6" between housings.

DRILLS AND RADIALS.

Henry & Wright sgl. spdl., high spd.
8-spindle, gang, adjustable centers.
34" Canedy-Otto plain, new.
4" Baush plain, heavy pattern.
44" Universal, cone drive.

Sensitive 1, 2 & 3 spindle.
High speed sgl. spdl. Cleveland.
20" Aurora, with tap. attachment.
24", 26" and 28" sliding head.
Quint 6-hole turret drill.

MILLING MACHINES.

No. 14 Valley City universal.
No. 4 Cincinnati plain.
No. 14 American plain.

No. 14 Valley City plain, new.
No. 3 Brainard, 30x7 table.
42" x 42" x 16" Lincoln slab miller.

GRINDERS.

12" x 36" Hartford, surface, new.
Landis 10x24 universal.
Litter 10x20 universal.

30x10 Webster & Perks, univ., new.
Cutter, reamer and tool, new.
Cincinnati cutter and tool.

MISCELLANEOUS.

Balancing machine for pulleys.
Band saws, metal, 30" Wright, (2).
Boring mill, 12", 2 swivel heads.
Boring mill, 32" Colburn, turret hd.
Bulldozers, No. 25 W. & W.
Compressor, 8" x 8" H. & B. belt.

Cut-off machine, 3" Davis.
Hammer, 55 Williams White Justice.
Motor, 75 h. p., 220 volt, 3 phase.
Pipe machines, 2, 4 & 6" Oster, new.
Punch and shear, 4" x 4".
Straightening rolls, 37" for 3 plate.

SECOND-HAND MACHINERY

FOR SALE BY

Harris Brothers Company. - 35th & Iron Sts., Chicago, Ill.
ENGINE LATHES.

14"x 6' Springfield.
16"x 6' Fay & Scott.
17"x 20' Linderman double spindle shell lathes.
18"x 12' New Haven.
20"x 8' Pond.
21" Potter & Johnston.

SCREW MACHINES

1" Kempnith hand screw machine. | 1/2" Pratt & Whitney double spindle
1/2, 3" and 2 1/2" Cleveland automatics. | automatic.

SHAPERS.

Fedrick & Ayer, open side, traveling head, 20" strokes.
20"x 20"x 8' Putnam planer.

PUNCH PRESSES.

No. 4 Bliss, solid back, b. f.
Queen City, solid back, 5 1/2" throat.
Queen City, solid back, 9 1/2"x 9" horn.

SHEARS.

Weiner & Pels steel plate angle and I-beam shear, for 15" beams.
Single end shear, 22" throat, punches 1 1/2" thru 1".
Single end shear, 11" throat, shear 8"x 1 1/2".
Single end punch, 27" throat, punches 1 1/2" thru 1".
Double end punch, Long & Allstatter, 24" throat one side, 8" throat other side, capacity 1" thru 1".

DRILL PRESSES.

Rausch 8 spindle universally adjustable sliding head multi-spindle drill.
6 spindle Woodward & Rogers, 1/2" capacity.
20, 26 and 28" upright drills, (3).
2 spindle Hoefler adj. gang drill, No. 5 Morse taper in spdl., table 18"x 56".

BORING MILLS.

1/2" Michael vertical boring mill, single head on rail.

MILLING MACHINES.

New 48" swing No. 6 Becker latest model univ. improved stand. vert., (2).
48x36x12 planer type Ingersoll slab miller.
Garvin No. 3 hand millers.

BENDING ROLLS.

12" Niles bending roll for 3/4" plate.
Power bending rolls, 16' long, for 3/16" plate.
Boilermakers' plate flanging clamp, 12' long.

PIPE MACHINES.

1" Armstrong pipe machine. | 4" Merrill pipe machine.

HAMMERS.

50-lb. Novelty trip hammer.

MISCELLANEOUS.

Buffing stands, (20).
Cold saw, No. 21 Higley.
Cold saw, Q. & C., for 8" rounds.
Gate shear or multiple punch, 60" Queen City.
Gear cutter, 60" Niles semi-automatic spur.
Gear hobber, No. 3 Lees-Bradner.
Grinders, double end heavy floor, for 24x4" wheels.
Grinder, Middleditch combination drill and tool.
Hydraulic presses, 60 and 80 ton, vertical.
Keysetter, 1" Morton.
Nut tapper, No. 4 Rodd automatic.
Shear, Lennox serpentine.
Steel brake, Dreis & Krump, 16', for 13 gauge.

SECOND-HAND MACHINERY

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,
1001-3-5 N. Sixth St., St. Louis, Mo.

LATHES.

14" 6' Hendey.
 14"x 6' Lodge & Shipley.
 15"x 6' Von Wyck.
 14"x 6' Whitcomb-Blaisdell.
 18"x 6' American.
 30"x 6' Rahn & Larmon.
 22"x27" Old Style.
 38"x16" LeBlond.
 3"x36" Jones & Lamson.

SHAPERS AND PLANERS.

12", 14", 16", 20" and 24" shapers.
 14"x14"x20" planer.
 36"x36"x8" Hamilton planer.

DRILLING MACHINES.

16" Elmore high speed.
 24" Henry & Wright high speed.
 20" Barnes.
 22" Barnes, sliding head.
 4' arm Bickford radial, almost new.

MISCELLANEOUS.

Beader, No. 0 Niagara.
 Bolt cutter, 14" National.
 Bulldozer, No. 3 Fisher.
 Fox Monitor lathe, Lodge & Davis.
 Gear cutter, 26" Cincinnati.
 Grinder, disc, No. 2 Gardner.
 Grinder, American, twist drill.
 Grinder, No. 38, plow-share.
 Hammer, 40 lb. Bradley.
 Miller, No. 2 LeBlond plain.
 Miller, Fox, hand.
 Pipe machine, 6" Forbes.
 Press, No. 40 Swaine, arch.
 Press, No. 52 Ferracute.
 Punch & shear, double end, cap. 1" in 1", has two 25" throats.
 Saw, No. 12 Higley.
 Screw machine, 1" Pratt & Whitney.
 Shear, 10" Niagara, power square.

FOR SALE BY

A. D. White Machinery Co., - 108-114 N. Jefferson St., Chicago.

PUNCH PRESSES AND PUNCHES AND SHEARS.

No. 3 American Can, o. b. i.
 No. 4 Consolidated.
 No. 3-P Ferracute, solid back.
 Waterbury reducing press, 8" str.
 No. 29 Bliss, gang, dbl. action.
 No. 6 L. & A. 6" thr., cap. 4" s. e.

DRILL PRESSES.

22" Rockford, stationary head.
 30" Bickford, sliding head.
 42" Barnes, sliding head.
 1-spdl. Henry & Wright, h. s.
 42" Miles plain radial.
 New upright drills, 14" to 24".

ENGINE LATHES.

10"x54" Davis.
 16"x12" Beaman & Smith.
 24"x10" Putnam.
 28"x25" Blaisdell.
 28"x10" Fifeild.
 Niles double axle lathe.

GRINDING MACHINES.

14" Norton, floor, (2).
 14" Safety Emery Wheel, floor.
 2" Springfield, double wheel, floor.
 Springfield, dbl. wheel, water.
 No. 2 Leland & F., water.
 No. 38 Safety Emery Wheel Co.
 plow grinder.

MILLING MACHINES AND PLANERS.

No. 1 Clough vert., rotary table.
 No. 3 Cincinnati plain.
 22"x22"x5" Ingersoll slab.
 No. 6 Becker Brainard, Lincoln.
 16"x16"x36" Draper planer.
 30"x27"x 6" Putnam planer.

SCREW MACHINES.

7-16" Cleveland, friction feed.
 1" Cleveland, friction feed.
 1" Cleveland, friction feed.
 1" Cleveland, jigger feed.
 1" Hartford, (3).
 1" Cleveland.
 1" LaVigne.
 1" Cleveland, semi-automatic.

MISCELLANEOUS.

Die filing machine, Simplex.
 Gas engine, 35 h. p. Columbus.
 Gas engine, 55 h. p. Bruce McBeth.
 Hammer, 500-lb. Sandage.
 Hobber, No. 1 Farwell.
 Keyseater, No. 3 Mitts & Merrill.
 Oil gas generator, No. 3 American.
 Saw, No. 54 Nutter-Barnes.
 Turret lathe, 24"x26" Greenlee.
 Turret lathe, 20" Fay & Scott.

SECOND-HAND MACHINERY

FOR SALE BY

Stocker-Rumely-Wachs Co., 117-121 N. Jefferson St., Chicago

In stock for immediate delivery.

BORING MILLS.

- 24" Bullard, with turret head and side head.
- 30" Bullard, with swivel head.
- 60" Bullard, with 2 swivel heads.

DRILLING MACHINES.

- | | |
|------------------------------------|---|
| Rockford bench drill. | 20" Barnes all geared. |
| 16" W. F. & J. Barnes, friction. | 25" Prentice, s. h., p. f. |
| 14" Washburn sensitive. | 24" Fosdick radial. |
| 14" Rockford sensitive. | 6" Gang radial. |
| Allen single spindle ball bearing. | 14" Leland-Gifford 2-spindle. |
| Taylor & Fenn sgl. spdl, high spd. | 12" Leland-Gifford 4-spindle, ball bearing. |
| 16" Cincinnati. | |

GEAR CUTTERS.

- No. 2 Standard.
- 25"x 7" Gould & Eberhardt, for spur gears.
- 30"x 8" Gould & Eberhardt, for spur gears.
- 72"x 18" Newton, for spur and bevel gears.
- No. 3 Farwell gear hobber.

GRINDERS.

- No. 1 Cincinnati universal tool and cutter.
- 12"x 48" Modern cylindrical.
- 10"x 24" No. 21 Landis cylindrical.
- No. 6 Modern, internal.
- No. 7 Gardner, disc.

LATHES.

- | | |
|-----------------------------------|---------------------------|
| 12"x 7' South Bend, c. r. | 28"x 18' New Haven, c. r. |
| 14"x 6' Flather, c. r., taper. | 32"x 14' New Haven, c. r. |
| 18"x 6' Bradford, c. r. | 37"x 18' Fifield, c. r. |
| 24"x 12' Schumacher & Boye, c. r. | |

MILLING MACHINES.

- | | |
|-------------------------------------|--------------------------------------|
| No. 6 Whitney, hand, dividing head. | No. 5-C Becker, vertical, new. |
| No. 2 Cincinnati plain. | No. 14 Pratt & W 2-spindle profiler. |
| No. 2 LeBlond plain. | Eynon-Ingersoll slab miller. |

PUNCHES AND PRESSES.

- No. 3 Bauroth, o. b. i.
- No. 3 Massillon, o. b. i.
- No. 4 Loshbough-Jordan, o. b. i.
- No. 34 Perkins sprue cutter.
- No. 3-P American Can.
- No. 16 Bliss horn press.
- No. 39 Bliss horn press.
- No. 2-A Bliss double crank geared press, 10" stroke.
- No. 4-T American Can double crank geared press, 6" stroke.
- No. 205H Toledo crank geared press, new, gap pattern, 96" bet. housings.
- No. 3 Ryerson geared punch, 4"x 4".
- No. 7 Massillon, single end punch and shear, 30" throat. arch. jaws, capacity 14" thru 1", new.

SCREW MACHINES.

- No. 2 Foster, plain head, a. c. & w. f.
- No. 2 Acme, plain head, a. c. & w. f., power feed to turret.
- No. 4 Warner & Swasey, geared friction head, a. c. & w. f., power feed to turret slide.
- No. 6 Warner & Swasey, geared friction head, a. c. & w. f., power feed to turret slide.
- No. 6 Foster, friction, a. c. & w. f., power feed to turret.
- No. 9 Bardons & Oliver geared friction head, a. c. & w. f., power feed to turret and cut-off slides.

MISCELLANEOUS.

- | | |
|------------------------------|--------------------------------|
| Metal slitter, Gray. | Tapping machine, No. 2 Garvin. |
| Shaper, 16" Baker, vertical. | |

SECOND-HAND MACHINERY

FOR SALE BY

The O'Brien Machinery Co.,

119 N. Third St., Philadelphia, Pa.

Bulldozer, No. 4 Williams & White.
Gear shaper, 36" Fellows.
Grinders, Pratt & Whitney vertical surface, (2).
Grinder, Gisholt, cutter.
Hammers, 50 lb. upright belt, (2).
Lathe, 18" x 9' Lehmann.
Lathes, new 18" x 9' Rockford, (5).
Lathe, 18" x 9' Lehmann.
Lathe, 26"-48" x 14' McCabe dbl. sp.
Lathe, 85" x 18' Bement.
Planer, 24" x 24" x 6' N. Y. Safety.
Punch and shear, sgl. end new, cap. 4x3 flat, 1" rd., punch 3/4" in 3/4" iron.
Press, No. 3 Henderson solid back. weight 3300 lbs.

Press, o. b. arch, No. 53 Toledo.
Punch, single end, 32" throat, Hilles & Jones, cap. 1 1/2" hole in 1 1/2" iron, No. 4 type.
Punch and shear, dbl. end new, cap. punch, 3/4" in 3/4"; cap. shear, 1 1/2" rd., 3/4" x 5" flat; weight 3,600.
Punch press, power, deep throat.
Rifling mch., horiz. boring or rifling, wt. about 10,000 lbs.
Saw, heavy type, cold.
Shaper, 12" Bement.
Shaper, 16" Smith & Mills, b. g.
Shapers, 24" Hollingsworth, b. g.
Spinning lathe, 44" swing, hvy. duty.

FOR SALE BY

Dale-Brewster Machinery Co., Inc.,

541-7 W. Washington Blvd., Chicago; 54-60 Lafayette St., New York

In Stock At Chicago

NEW

LATHES.

24" x 13' Chard, d. b. g., q. c. g.
20" x 11' Chard, d. b. g., q. c. g.
18" x 9' Chard, d. b. g., q. c. g.
18" x 8' Cisco, d. b. g., q. c. g.
14" x 6' Cisco, s. b. g., q. c. g.

13" x 6' Lancaster standard.
13" x 5' South Bend standard.
12" x 4' 6" Cleveland precision, (2).
7" No. 4 Hardinge bench.
6" x 30" Dalton bench, s. b. g.

DRILLING MACHINES.

36" Snyder, sliding head.
30" Snyder, sliding head.
28" Snyder, sliding head, (3).
25" Snyder, sliding head.
25" Silver, sliding head.
23" Snyder, stationary head, (8).
20" Canedy-Otto, p. f., b. g., (3).
20" Canedy-Otto, wheel and lever.
20" Silver, p. f., back geared.
20" Silver, wheel and lever, (2).
No. 101 Canedy-Otto radial, 34" arm.

14" U. S. sensitive.
14" Champion, (4).
Detroit 1-spindle, h. s., b. b.
Detroit 2-spindle, h. s., b. b.
No. 32-D Demco 1-spdl., h. s., b. b.
No. 32-D Demco 2-spdl., h. s., b. b.
No. 32-D Demco 3-spdl., h. s., b. b.
No. 30-A Demco, bench, h. s., b. b.
No. 22 Demco bench, h. s., b. b.
Various sizes and types bench drills.

GRINDERS.

No. 3 Modern universal, (4).
No. 1 Norton cutter and reamer, (3).
No. 2 Norton cutter and reamer.
Hacker "All-Angle" tool room.
No. 3 W. & M. surface grinder.
No. 1 LaSalle plain and surface.

16" x 14" Milwaukee wet tool.
24" Milwaukee wet tool.
No. A-1-T Grand Rapids, drill.
No. B-2-T Grand Rapids, drill.
No. C-3-T Grand Rapids, drill.
Dumore grinders, 116-220.

MISCELLANEOUS.

Arbor presses, Atlas, all sizes.
Band saw, 10x10 Napier.
Filing mach., Barry, bench and floor.
Filing machine, motor driven, bench.
Gear hobber, No. 3 Farwell.
Hack saws, Peerless 9x9 and 6x6.
Miller, No. 1-A Fox plain, p. f.

Miller, No. 1-B Fox plain.
Miller, No. 2-A Fox universal.
Millers, No. 2 Cleveland univ., (3).
Punch press, No. 1 Rockford.
Punch press, No. 3 Rockford.
Punch press, No. 4 Rockford.
Shapers, 18" Barker, (2).

USED

Boring mill, 42" King.
Cold saw, Higley.
Grinder, Wells tool room.
Lathe, 14" x 6' Hendey.

Miller, No. 2 Kempsmith plain.
Miller, No. 14 Rockford plain.
Miller, No. 1-A Milwaukee plain.
Punch press, No. 4 Walsh o. b. inc.

SECOND-HAND MACHINERY

FOR SALE BY

Brown-McDonald Machinery Co., 2323 N. 9th St., St. Louis, Mo.
BORING MILL.

48" Bullard, vert., 1 plain & 1 swivel hd. on cross rail, face plate jaws, used.

LATHES.

13"x 6' South Bend, c. r., h. s., new.
13"x 6' Champion, c. r., h. s., new.
15"x 8' South Bend, c. r., h. s., new.
16"x 8' South Bend, c. r., h. s., new.
16"x 8' Walcott, q. c. g., d. b. g., c. r., h. s., new.
20"x 10' Walcott, q. c. g., d. b. g., c. r., h. s., new.

16"x 8' American, q. c. g., used.
20"x 10' Walcott & Wood, h. s., cpd. r., used.
20"x 8' Oakley, d. b. g., not screw cutting, used.
14"x 6' Fitchburg, s. s., p. r., used.
14" Pierce, plain head, turret, new.
22" Davis, b. g. turret, used.

DRILLING MACHINES.

No. 1 Burke, bench, with chucks, new.
14" Excelsior, 2 tables, new.
2 spindle Kern, b. b., cap. 1", 16" swing.
24" No. 101 C-O. radial new.

24" Drees simplex radial, with tapping attachment.
20" Silver, s. b., w. & l., new.
20" Silver, s. b., b. g., p. f., new.
25" Aurora, b. g., p. f., new.
30" Prentice, s. b., s. h., p. f., used.

SHAPERS.

16", 20" & 24" Milwaukee, b. g., latest improved, new.

SCREW MACHINES.

No. 3 Smurr & Kamen, plain head, new.
No. 4 Smurr & Kamen, geared friction head, p. f. to turret, new.
Wood, Tilted Turret.

MILLING MACHINES.

No. 1 U. S. hand, vise and arbor, new.
No. 3 LeBlond plain, with dividing head, used.
No. 3B Owen plain, with vertical attachment and dividing head, used.
No. 3 Garvin, hand, used.
No. 2 Pratt & Whitney, Lincoln type.

PRESSES.

No. 1 Bauroth, o. b. l., new.
No. 3 Loshbough-J., o. b. l., new.
No. 4 Loshbough-J., o. b. l., new.
No. 3 Kohler, o. b. l., used.

SAWS.

Nos. 1 & 3 Marvel, draw cut, new.
No. 1 Racine high speed, new.

GRINDERS.

Nos. 1, 2 & 3 Western, d. c., new.
Nos. 1, 2 & 3 St. Louis, d. c., new.
No. 20 Safety E. W. Co., elec. (4).
U. S., electric, 110 v., d. c., bench.
Heald, ring, 8", used.
Esley, cylindrical.
No. 1 La Salle plain and surface, new.
No. 3 Ohio, universal cutter & tool, used.

COMPRESSORS.

Nos. 2, 3 & 4 Model B, vert., belted, new.
Norwalk, steam, 1000 cu. ft., used.
6x6 Star vertical, belted, single cylinder, double acting.

MISCELLANEOUS.

Motor, 10 h. p. Wagner, 60 cy., 3 p., 440 x., 850 r. p. m., used.
Pipe mch., No. 86 Forbes, 4", used.
Planer, 36"x36"x12' Patch, o. s., 1 hd. on cross rail, 1 head on side, used.
Pipe machine, 3" Borden, hand.
Welder, spot, Toledo Electric, 230 volts, 60 cy., 12" arms, 18 ga., used.
Large stock of tinners' tools.

CHUCKS.

5", 7 1/2" & 9" 3-jaw Sweetland, scroll, new.
8" & 12" 4-jaw Sweetland, ind., new.
5", 6", 7 1/2", 9" 3-jaw Cushman, univ., used.
No. 10 National Acme, s. o., die hd.
12" 3-jaw Manufacturers Equipment Co. air chucks, used.
16" 4-jaw Wescott, combination, cutting off.

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Osgood,

45 Pearl St., Buffalo, N. Y.

Chucking lathe, 21" P. & J.....\$ 350.

Screw machine, No. 5 W. & S.\$ 375.

Screw machine, 1"x10" P. & W.
hexagon turret..... 250.

Shell cutting-off mche., 14" Williams
Turret lathe, 12" B. & S..... 200.

FOR SALE BY

Machinery Warehouse Co.,

1405 West 37th St., Chicago, Ill.

Air compressor, 4x5 Blaisdell.

Gasoline engine, 3 h. p., Fairbanks.

Air hoists, 12"x72" Curtis, 8000 lb.
capacity, (2).

Gasoline engine, 4 h. p., Anderson.

Chain hoist, 6-ton Harrington.

Hammer, 50 lb. power.

Cold cut-off saw, 32", power.

Punch, single end, 3" in 4".
Punch press, open back.

Gasoline engine, 1 h. p., Aermotor.

Write for our list of Rebuilt Machinery

FOR SALE BY

Girard Machine & Tool Co., 491-493 N. Third St., Philadelphia, Pa.

Boring and chucking machine, vertical, 36" Brown & Sharpe.

Engine lathe, 24"x12" Pratt & Whitney.

Engine lathe, 25"x16" Blaisdell.

Engine lathe, 28"x12" New Haven.

Lot of 12, 14, 16 and 18" lathes, with various size heads.

Planer, 36"x36"x12" Wilson, two heads on cross rail.

Planer, 30"x30"x 8" Woodward & Powell, one head on cross rail.

Planer, 24"x24"x 6" Woodward & Powell, one head on cross rail.

Turret lathes, 2"x24" Jones & Lamson, geared set-over head, single pulley

drive, bar equipment (2)

Turret lathes, No. 3 Foster, 14" automatic chuck capacity, oil pan, pl. hd., (4).

Lot of other size lathes and screw machines, drill presses, etc.

FOR SALE BY

Niles-Bement-Pond Company,

111 Broadway, New York

Located at Chicago, Boston and New York

LATHES.

15"x 7' P. & W. speed lathe.

16"x 8' VonWyck, quick change.

TURRET MACHINES.

4" 4-spdl. old style Acme auto.

24" size I Gisholt, 220 v., d. c., m. &

2" Spencer single turret automatic.

28" Milwaukee turret lathe.

2"x24" Jones & Lamson, cone head.

PLANERS.

30"x30"x 6' Pond, 2 heads.

72"x54"x10' Pond.

30"x30"x 8' Pond, 2 heads.

72"x72"x18' Pond.

30"x30"x10' Pond, 2 heads.

DRILLING AND BORING MACHINES.

60" Niles gooseneck drill.

Radial, 5' Niles semi-univ.

14" 4-spindle turret drill.

Radial, 6' Niles semi-univ.

17" 4-spindle gang drill.

2" sp. old style horizontal boring and

3" Grant radial drill and boring mch.

drilling machine.

MISCELLANEOUS.

Blower, steel pressure, No. 10 Sturt-

Grinder, wet saw, No. 1 Tindel.

evant.

Grinder, cutter, No. 1 Cincinnati.

Boring mill, horis., 48" spindle, 9'

Grinder, wet, dbl., 24" cup wheels.

table, Bement.

Grinder, 16x66 No. 4 Landis univ.

Gear cutter, spur, 42" Bement.

Miller, No. 3-H LeBlond universal

Gear planer, bevel, 42" Gleason, old

Saw, cold, P. & W., 8" capacity.

style.

SECOND-HAND MACHINERY

FOR SALE BY

Brownell Machinery Co.,

Cutting-off machines, H. & B. 6" accelerated speed type.
Drill, 14" sensitive.
Drill, No. 3 Langelier b. b., new.
Drill, 2-spindle Henry & Wright.
Drill, 20" Snyder, w. & l.
Drop hammer, 200 lbs. plain.
Drop hammer, 400 lbs. automatic.
Gear cutters, No. 3-A Cin'ti., new.
Grinder, No. 1 Morse, new.
Lathe, 9"x4" Seneca Falls, new.

11-13 Eddy St., Providence, R. I.

Lathe, 16"x6" Reed, r. & f.
Lathe, 18"x8" Perkins, new.
Lathe, 20"x10" Perkins, new.
Lathe, 21" Gisholt turret.
Lathe, 24" Gisholt turret.
Planer, 24"x24"x6" Putnam, new.
Planer, 22"x22"x5" Whitcomb.
Planer, 24"x24"x6" Whitcomb.
Press, No. 5 Perkins, single action.
Press, No. 2 Standard broaching and drawing.

FOR SALE BY

B. C. Allen Machinery Co.,

Band saw, metal.....\$ 125.
Blower, No. 4 Buffalo.....30.
Car-wheel borer, 48".....1050.
Cylinder boring machine.....1400.
Bolt cutter, 14".....100.
Brakes, 4' 855; 5'.....80.
Chucks, 6, 9, 10, 14, 16".....
Drill press, 2 tables.....40.
Drill press, 20" w. & l.....65.
Drill press, 24" sliding head.....125.
Drill press, 30" sliding head.....500.
Drill, radial, 4'.....950.
Hack saws, (5).....
Keyseater, No. 1 Davis.....180.
Lathe, 13"x5" Barnes, c. r., c. f. 140.
Lathe, 14"x 8" Flather, c. r.....275.
Lathe, 16"x 8" L. & Davis.....425.
Lathe, 2x24" J. & L.....550.

104 S. Clinton St., Chicago

Lathe, 20-28x14" gap.....\$ 850.
Lathe, 32"x16".....250.
Lathe, 36"x16" triple geared.....2000.
Miller, No. 2 P. & W., hand.....165.
Miller, No. 2 Kempsmith pl.....800.
Miller, No. 2 Osterlein univ.....175.
Miller, No. 1 Steptoe.....600.
Pipe machine, 2".....100.
Planer, 36"x36"x10".....850.
Polishing lathe.....60.
Punch press, No. 4 inc.....435.
Punch press, foot.....20.
Screw machine, 24" Foster.....900.
Shaper, 14" Steptoe.....325.
Shaper, 16" Steptoe.....400.
Shaper, 20" Milwaukee, b. g.....925.
Square shear, 36".....35.
Square sh., 10' Niagara, 20 ga. 300.

FOR SALE BY

Frank H. Parker Company, Machinery Merchants—

First Nat'l Bank Bldg., Chicago, Ill. Telephone, Randolph 925

Boring mill, Putnam 48".....\$1200.
Blower, pos., Garden City No. 2 100.
Bolt cutter, 2 head Nat'l.....400.
Brake, 10' for No. 14 gauge.....125.
Brake, 10' for No. 12 gauge.....125.
Brake, 8' for No. 22 gauge.....75.
Brake, 4' for No. 22 gauge.....50.
Compressor, air, 4"x8", 2 cyl. 175.
Compressor, air, 5"x8", 1 cyl. 75.
Cutting-off machine 6".....300.
Drill press, 56" Niles.....450.
Drill press, 30" s. h., b. g.....225.
Engine, gasoline, 6 h. p.....50.
Engine, gasoline, 20 h. p.....100.
Engine, oil, 25 h. p.....150.
Generator, 100 k. w., 3 h. p., 60 cy. 900.
Grinder, 10"x30" universal.....900.
Grinder, electric, has 2 wheels 24"x18".....100.
Hammer, 60 lb., L. & A., helve 300.
Hammer, 1500 lb., Niles, steam 4000.
Lathe, 30" for facing columns.....50.
Lathe, 16"x8" old, Putnam.....75.

Lathe, 18"x9" old, Lathe & Morse 90.
Lathe, 18"x12" Bradford, c. r., h. s. 750.
Lathe, 18"x10" Bradford, c. r., h. s. 650.
Lathe, 42"x16" Niles, c. r., s. s. 1500.
Lathe, 25"x22" Niles, c. r., s. s. 1200.
Milling machine, No. 4 Cincinnati plain.....1300.
Miller, slab, 18"x8" table.....1500.
Pipe cutter 2".....150.
Pipe cutter 3".....350.
Pipe cutter 4".....400.
Pipe cutter 6".....500.
Punch on wheels for 15" I-beam 100.
Scale, 10-ton, wagon.....300.
Shaper, 14", traveling head.....200.
Shear, slitting, 1", hand.....40.
Shear, slitting, 1", power.....110.
Shear, 8' square, No. 20 gauge 225.
Shear, 7' square, No. 24 gauge 75.
Shear, 6' square, No. 30 gauge 150.
Shear, 36" square, no gauges.....25.
Testing mche. 50,000 lb Riehle 600.
Tire setter, West No. 3.....1100.

SECOND-HAND MACHINERY

FOR SALE BY

Peninsular Machinery Co., 281 E. Jefferson Ave., Detroit, Mich.

Drill 10" Hoefler, friction disc.	Lathe, 16"x 8" LeBlond, eng., q. c. g.
Drill, 20" Rockford.	Lathe, 17"x 8" LeBlond, rap. produc.
Drill, 22" Rockford.	Lathe, 17"x 8" LeBlond, h. d. auto.
Drill, 24" Fostick.	Lathe, 17"x10" LeBlond, automobile.
Grinder, No. 1 LeBlond universal.	Lathe, 20"x10" LeBlond, engine.
Grinder, drill and tool, Grand Rapids	Radial, 3' Fostick.
Grinder, No. 3 Blount, emery.	Radial, 3 1/2' Fostick.
Grinder, No. 6 Blount, emery.	Shaper, 20" Rockford.
Groover, No. 3 Niagara.	Shaper, 24" Walcott, crank.

FOR SALE BY

J. L. Lucas & Son, Inc., No. 3 Fox St., Bridgeport, Conn.

"You" want what you want when you want it.

DRILLING MACHINES.

No. 00 Burke.	Beaman & Smith horizontal boring,
24" New Haven.	drilling and milling machine.
28" New Haven.	

GRINDERS.

Brown & Sharpe No. 2 surface.	Type D Diamond surface.
-------------------------------	-------------------------

HAMMERS.

600 lb. Bliss, board.	200 lb. Farrel Foundry, rope.
500 lb. Mossberg & Granville, strap.	

LATHES.

30"x12" Fifeild	48"x20" Seth Wilmarth.
20"x30" Fifeild.	48"x24" Putnam.

FOR SALE BY

Herman L. Winterer, 943-53 N. Front St., Philadelphia, Pa.

LATHES.

31"x14" Niles, back geared, (2).	16"x 6" Hamilton, q. c. g.
20"x 8" Putnam.	16"x 6" Prentice, q. c. g.
18"x 8" LeBlond.	And many others.
18"x 8" Pond.	

TURRET LATHES.

3"x36" Jones & Lamson, (2).	3"x28" Lodge & Shipley, chucking
18" Gisholt.	lathe.
7"x14" Potter & J. semi-auto., (2).	27" Chucking lathe.

DRILL PRESSES.

48" American radial.	30" Hamilton radial.
40" Barnes horizontal radials, (2).	28" Snyder vertical, (2).
36" Bickford radials, circular base,	20" Baker high speed heavy duty, (3).
motor driven, (2).	Style F Baker.

MISCELLANEOUS.

Boring mill, 38" Beaman & Smith.	Milling machine, No. 15 Garvin.
Grinder, disc, No. 17 Besly.	Milling mch., No. 2A Kempsmith.
Grinder, disc, 18" Baylon.	Milling mch., No. 2 B. & S. univ.
Grinder, No. 14-12"x5" B. & S. plain.	Press, Waterbury-F. horiz., 3" stroke.
Grinder, tool room, Heald univ.	Presses, bk. grd. arch, 8" stroke, (2).
Grinder, roll, 54"x104" Diamond.	Press, No. 21 Ferracute.

BOILERMAKERS' AND SHIP MACHINERY.

Flanging press, 100-150 ton, with extra knockout plunger, platens 7'2" long and 4'2" wide, practically new.

Shear, 24" Hans Kraut beam, cuts from 3 to 24" beams, H. columns, channels and shapes, practically new.

Steam hammer, Dudgeon, 1,500 lb. capacity.

Large assortment of General Machinery.

Send for complete list.

Some Real Bargains

Punches & Shears

50" tht. sgle. end $1\frac{1}{4} \times 1\frac{1}{4}$ cap. | 12" tht. dble. end 1 x 1 cap.
 42" tht. sgle. end 1 x 1 cap. | 7" tht. dble. end $\frac{3}{8} \times \frac{3}{8}$ cap.
 34" tht. sgle. end 1 x 1 cap. | 6" tht. dble. end $\frac{3}{4} \times \frac{3}{4}$ cap.

Lathes

1—Used 24" x 12' LeBlond (Good as new).
 1—Each (New) Sidney Heavy Duty 27", 25", 19", 17" and 15"
 by 6', 8', 10', 12' and 14' beds. All 3-step cone, D. B. G., Q. C.
 2—24" Gisholt Lathes—Chuck equipment.

Millers

1—No. 3 LeBlond; Plain D. B. G., cone type.
 1—No. 3 Cincinnati; Plain D. B. G., cone type.
 1—No. 1½ Kearney & Trecker; Plain motor drive, with 5 H. P.
 Ver. speed, 220-V., and Rheostat.

Brakes

Dries & Krump (Hand) 8 ft. for 16-Gauge.
 Dries & Krump, for 3/16 iron.

Welders

1—Butt Welder, "National" $\frac{7}{8} \times \frac{7}{8}$ " Cap. 220-Volt, 60-Cycle.
 1—Tire Welder, Long & Allstatler, Cap. up to $3\frac{1}{2} \times \frac{3}{4}$ " Tires.

500 Machines on our floor. Send us your inquiries.

WAYNE MACHINERY CO., Fort Wayne, Ind.

Engine Room Equipment

One $4\frac{1}{2} \times 23\frac{3}{4} \times 4$ " Gardner Duplex Steam Pump.

One $5 \times 2\frac{1}{2} \times 6$ " Whitter Duplex Steam Pump.

One 14×36 " Allis-Chalmers Corliss Steam Engine.

One 66×14 " Freeman Horizontal Tubular Boiler.

One 30×16 " Buffalo Closed Pattern Purifier.

One 24×16 " 8" Open Pattern Feed Water Heater.

One 22×69 " Allis-Chalmers "Reynolds" Closed
 Pattern Feed Water Heater.

Badger-Packard Machinery Co.

133-139 W. Water St.,

Milwaukee, Wis.

NEW MACHINE TOOLS USED

Complete Lines Carried In Stock

LATHES	MILLERS
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**INDUSTRIAL FURNACES, BLOWERS
PYROMETERS**

*Inquiries from manufacturers and consumers
of MACHINE TOOLS respectfully solicited*

CARPENTER & WOODWARD, Inc.
233 BROADWAY, NEW YORK, N. Y.

Bennett Bargains

Planers

18-22-26-30-32-36-42-54-60" between housings; 1-2-3 and 4 heads.

Vertical Boring Mills

30", 36", 52", 76" and 10'.

Horizontal Boring Machines

21", 3", 4"; also 5" Barret type.

Radial Drills

2½', 3 and 6'—Plain and Universal.

Upright and Multiple Drills

12"-24"-36" and 42"; also 3 and 6 spindle.

Lathes

Various sizes from 16" to 102" swing, 6' to 40' beds.

Turrets

2x24", 20x6", 20" also 34".

Milling Machines

48x36x14" Ingersoll 4 heads; 20"x7' Brainerd.
36" Shaper; 54" Slotter.

**Also Punches and Shears, Gear Cutters, Grinders,
Hammers, Presses, Cranes, Bolt and Pipe Machines**

Advise us of all equipment you wish to purchase or sell

G. L. Bennett Machinery Co., Inc.
30 Church Street - - New York City

Immediate Shipment

7"x30" CANTON, Semi-Precision Lathe, 3 step cone, back grd., compound rest, screw cutting, change gears. Good as new.
 15"x 6' GLOBE Engine Lathe, C. R., C. S., etc., NEW.
 15"x 8' GLOBE Engine Lathe, C. R., C. S., etc., NEW.
 14"x 6' CHAMPION Double Head Lathe.
 20"x10' FLATHER, Q. C. G. Engine Lathe, chucks, tools, etc.
 38"x24' Niles-Bement-P., Triple Geared, Motor Driven, Variable Speed Motor, Q. C. G., Taper Att., 18' centers. A-1.
 96"x32' Triple Geared, Face Plate Dr. Engine Lathe, 21' centers.
 No. 14 VALLEY CITY Full Universal Milling Machines.
 No. 14 VALLEY CITY Plain Manufacturing Millers.
 No. 8 KEMPSMITH, Plain Manufacturing Miller.
 PRATT & WHITNEY, 8 Spindle Multiple Drill, Cap. 1" drills, working from 12" to 30", 30"x48" table. Good condition.
 No. 6, FOX, 20 Spindle Multiple Drill.
 24' CARLTON, Sensitive Radial Drill, Good as new.
 Large Stock Sensitive, Stationary Hd. and Sliding Hd. Drills.
 20" SMITH & MILLS Crank Shaper, Very Good.
 20" KELLY, Back Geared Crank Shaper.
 15" KELLY, Geared Crank Shaper.
 Slitting Shear, LENNOX, 3" cap., Dbl. Housing Type, 72" Thrt.
 Bevel Shear, WANGLER, 3" cap., either Belt or Motor Driven.
 72" Pyramid type Power Bending Rolls, SCULLY, cap. 4" A-1.
 26" Vertical Boring Mill, CINCINNATI, Turret Head, Universal Chuck Table, Geared Feeds.
 NILES, Horizontal Boring, Drilling and Milling Machine, 4" bar, compound table, bores to center of 60", motor driven. First class cond.
 No. 5-B, Vertical Milling Machine, BECKER, With Power Rotary table, Late Type.
 Drawing Press, No. 4 DDG, FERRACUTE, Dbl. Acting, B. G.
 No. 15 STOLL, Inclined Power Press.
 2-No. 14, STOLL, Inclined Power Presses.
 Grinder, No. 3 LANDIS, Universal, cap. 20"x42". A-1.
 Grinder, No. 1 LANDIS, Universal, cap. 10"x24". A-1.
 Large Stock Double Emery Grinders, Wet Tool Grinders, Etc.

Miscellaneous Equipment

No. 1 LAPOINTE Broaching Machine.
 CLEVELAND, 4" Automatic Worm Miller.
 GRANT Motor Driven Rivet Spinning Machine.
 1" NATIONAL, All Steel, Wedge Grip Bolt and Rivet Header, new.
 No. 1 GARVIN Automatic Tapping Machine.
 9"x8" INGERSOLL RAND Belt Dr., Sgl. Stage Air Compressor.
 15 h. p. FAIRBANKS-MORSE Horizontal Gas Engine.
 WESTINGHOUSE Motor Dr. Dbl. Emery Grinder on Column.
 CLAYTON Duplex Steam Dr. Air Compressor, cap. 350 cu. ft.

We also have a good stock of Sheet Metal Machinery, Woodworking Machinery, Spot Welders, etc.

Send Us Your Requirements. Send Us List of Your Idle Equipment.

D. M. Osborne Machinery Co.

Salesroom 221 St. Clair Ave., N. E., Cleveland, O.

"New York's Greatest Clearing House—J. J. McCabe Lathe & Machinery Corporation"

The days of "camouflage" are over—

and "re-fixing over" Used Tools is a thing of the past.

J. J. McCabe Lathe & Mach'y Corp'n never has, nor never will, handle Used Machinery so far gone—such tools are left to someone else in that line of the Used Machinery business. **"Positive Reliability"** is what you want—not the Reliability given you by so-called made-over or Rebuilt Machinery.

NEW LATHES ABSOLUTELY IN STOCK

5-16"x3'	3-21"x12'
4-16"x8'	2-21"x14'
2-16"x10'	1-24"x12' Taper
10-18"x16'	2-26"x16'
1-12"x12'	1-26"x18'
1-12"x12'	1-26"x20'

Covering the capacity of TWO complete Lathes—on the ONE bed.

PLANNER TYPE MILLING MACHINE (NEW)

26/48" Swing, 20-ft. bed, McCabe, Double spindle Taper.

24" Swing, 12-14 ft. bed, Bement.
24" Swing, 10-ft. bed, New Haven.
18" Swing, 10' bed, Porter.
18" Swing, 8' bed, New Haven.
18" Swing, 8' bed, Bridgeford.
18" Swing, 8' bed, Hendey.
18" Swing, 8' bed, Hendey.

BORING MACHINES (USED)

Horizontal, 30" bar Fitchburg.
Upright, 38" Swing, Brown & S., Tur. Hd.
Carveel Borer, 42" Swing, Bement Miles.

MILLING MACHINES (USED)

(Seven) "Cincinnati" No. 3, Plain, tables 32 in. x 12 in., longitudinal feed 24 in.
(Two) "Brainard, Pl., tbl. 48" long, 14" wide, "Newton" horiz. and vert. hd. tbl., 60" x 12".
(Ten) Lincoln type, tables 28" x 12".
(New) Planer type Milling Machines.

DRILLS (USED)

Vertical, 30" Swing, with Centers.
Gear Planer, 24" Gleason, complete.
12-14-16 and 20-in. stroke, various makes.
HYDRAULIC RIVETER.

HONEST SERVICE

NEW MACHINES

14"x6" Champion Q. C. Lathe with taper attachment.
 No. 2-B Washburn Shops single spindle Drill.
 6x6 Peerless High Speed Metal Saw.
 Simmons Premier Universal Tool and Cutter Grinder.
 No. 32-B Demco Floor Type Drill Press, two spindle.
 No. 32-B Demco Floor Type Drill Press, three spindle.
 Webster & Perks No. 1 and No. 2 Floor Type Grinders.
 No. 4½ Bardons & Oliver Turret Lathes, complete with power feed
 to cut-off, power feed to turret and regular equipment.
 No. 2 Toledo Hand Screw Machines.
 No. 2 Grand Rapids Universal Grinder.

USED MACHINES

12"x6" Gould & Eberhardt Gear Hobbers.
 24"x12" Gould & Eberhardt Gear Hobbers.
 Adams No. 1 Gear Hobber.
 No. 1 two spindle Garvin Tapping Machine.
 No. 0 Brown & Sharpe Automatic Screw Machine.
 No. 3 Brown & Sharpe Gear Cutters, 36" and 36".
 No. 2 J. N. Lapointe Tool Co., double Broaching Machine.
 48" Newton Portable Slotter.
 60"x8" Newton Rotary Planer.
 Newton Horizontal Boring Mill, four spindle.
 W. & S. Hollow Hex. Turret Lathe, bar and chucking, good cond.

THE BIGGS-WATTERSON CO., - - CLEVELAND, O.

WE OFFER FOR IMMEDIATE SHIPMENT

60 CYCLE—2 PHASE

1—100 h. p.— Allis-Chalmers— 570 r. p. m.
 2—100 h. p.— " " — 1750 r. p. m.

60 CYCLE—3 PHASE

1—100 h. p.— G. E. Slipring — 720 r. p. m.
 4— 50 h. p.— G. E. KT — 900 r. p. m.

25 CYCLE—3 PHASE

10— 15 h. p.— G. E. KT — 750 r. p. m.
 5— 30 h. p.— G. E. KT — 750 r. p. m.
 5— 50 h. p.— G. E. KT — 750 r. p. m.

Motor Generator Set, Accessories and Switch-
 board 85 KVA, 900 r. p. m., 3 ph., 60 cy. Crock-
 er-Wheeler Synchronous Motor direct connected
 to 357 amp. 230 volt Generator.

5— 15 h. p. 230 volt, 800 r. p. m. "RC" G. E.
 Motor complete with controllers.

Write for Nagel Motor List No. 26

 THE W.G. NAGEL ELECTRIC CO. 
 TOLEDO, OHIO

ReMANUFACTURED -(ORIGINATED BY US)- MACHINE TOOLS

FOR QUICK SHIPMENT

At Chicago—The Great Machinery Center

LATHES

- 1-60"x23" New Haven Triple Grd.
- 1-60"x16" Fifeild.
- 1-36"x20" New Haven.
- 1-14"x 6" Putnam.
- 1-13"x 6" Willard, D. B. G.
- 1-13"x 5" Prentiss, taper.

TURRET & SCREW MCHES.

- 1-2"x24" Jones & Lamson.
- 1-18" American Screw.
- 6-24" Gisholt.
- 1-24" No. 9 Foster.
- 1-22" Steinle.
- 3-21" Gisholt.
- 1-18"x6" Lodge & Davis Cabinet Turret.
- 1-13" Foster.
- 1-12" Foster-Kimball.

RADIALS

- 1-84" Baush Plain.
- 1-8" Putnam Plain.
- 1-5" Universal Radial.

BORING MACHINES

- 1-6" bar Sellers Cylinder Borer.
- 1-Beaman & Smith Duplex Cylinder Boring and Milling.

PLANERS

- 1-76"x48"x18" Woodward & Powell, 2 heads.
- 1-48"x48"x18" Sellers, 1 head.
- 1-36"x36"x17" Powell, 2 heads.
- 1-36"x36"x13" Sellers, 2 heads.
- 1-30"x30"x10" Cincinnati, 2 heads.
- 1-28"x26"x 6" Gray.
- 1-28"x26"x 6" American.
- 1-24"x24"x 6" Hamilton.
- 1-24"x24"x 6" American.

MILLING MACHINES

- 1-No. 4 Beaman & Smith Open Side Vertical.
- 2-No. 32 Kempamith Lincoln.
- 2-No. 14 Garvin Plain.

GEAR CUTTERS

- 1-11" Gleason Generator.
- 1-No. 2 Robey-Smith Bevel Planer.
- 1-No. 1 Robey-Smith Bevel Planer.

GRINDERS

- 1-Wells Cutter Reamer.
- 1-4"x20" Morse.
- 1-6"x30" Morton Plain.
- 5-12"x24" Modern Plain.

Write for our Green List describing these and many others

HILL, CLARKE & CO. OF CHICAGO

649 W. WASHINGTON BLVD., CHICAGO, ILL.

Machine Tools Immediately Available

One Kempsmith new No. 3 Universal Miller.
One Owen No. 0 back geared Plain Miller with 10" universal centers, good as new.
One Garvin No. 11 Plain Milling Machine, good as new.
One Becker-Brainerd No. 1½ back geared Universal Miller, complete, excellent condition.
Two Gisholt 21" swing Turret Lathes, taper attach., excellent cond.
One Fifield 30"x10' triple geared Engine Lathe, excellent condition.
One Pratt & Whitney 24"x8' Planer, excellent condition.
One Pratt & Whitney 30"x14' Planer, one head, excellent condition.
One Chandler 36"x12' Planer with two heads, arranged for motor drive, high speed type, excellent condition.
One Whitcomb-Blaisdell second-belt drive planer, 36"x8', two heads on the rail, new.
One Bath Universal Grinder No. 2, 10x24, guaranteed practically new, complete equipment.
One Ditto No. 2½, complete equip., 10x36, guaranteed practically new.

Factory & Mill Supply Co.
137 Oliver St., Boston, Mass.

Second Hand Machinery

DRILLING MACHINES.

No. 117 Moline heavy single spindle "Hole Hog", (2).
Allen four spindle high speed ball bearing, New.

ENGINE LATHES.

15"x6' Johnson, comp. r., taper.	24"x12' Reed, compound rest.
16"x6' Fifield, rise and fall rest.	24"x7' with turret on shears.
20"x13' New Haven, comp. rest.	32"x16' Fay & Scott, c. r., turret on shears, turret tool post.
21"x10' LeBlond crankshaft, (2).	

PLANERS.

24"x24"x6' Rockford, one head New.

TURRET LATHES AND SCREW MACHINES.

24"x26" Cincinnati Acme flat turret lathe, with bar and chuck equip.
3"x36" Jones & Lamson, flat turret, with bar equipment.
1" Cleveland automatic.
1" Gates automatic.
1" Hartford automatic.
1½" Hartford automatic.

MISCELLANEOUS.

Cold saw, 12" Burke.	Shaper, 12" Springfield, plain crank.
Pipe machine, 2" Jarecki.	Shaper, 12" traveling head.
Pipe machine, 3" Stoeber.	

Marshall & Huschart Machinery Co.

17 S. Jefferson St., Chicago, Ill. 915 Chemical Bldg., St. Louis, Mo.

Good Used Tools

BORING MACHINES.

2-spindle Moline adjustable center cylinder borer.

DRILLING MACHINES.

1-spindle Henry & Wright ball bearing, sensitive, 24 swing.
4-spindle 14" Foote-Burt.
6-spindle No. 4 Quint turret.
6-spindle Gardam.
4-spindle 26" Barnes, sliding head gang drills, 3 jaw chucks, (2).

14-spindle No. 0 Fox.
25" Blaisdell sliding head drill.
26" Snyder, sliding head, (2).
23" Rockford, sliding head, 1" chuck fitted.
10" Barnes sensitive, (3).

GRINDERS.

BX Yankee tool grinder.
12x60 Landis universal.
No. 60 Heald cylinder.
12x36" Norton.
No. 4 Van Norman internal.
No. 11 Rivett, oscillating.
No. 6 Bryant internal.
46"x8" Springfield, surface.

"H" Point Yankee twist drill.
No. 12 Cinn. cylinder and internal grinding attach. Surface and gear 4" cutter grinding attachment.
No. 70 Heald internal, type F, wheel head and collet chuck.
3' P. & W. vert. surface, with 30"x10" Walker magnetic chuck.

LATHES.

11"x4' Mann.
14"x6' Prentice Brothers, compound rest.
16"x6' LeBlond, q. c., 5-step, c. r., p. c. f., 1 1/2" h. s.
16"x6' Porter, 5-step, pl. rest, p. c. f., special draw-in chuck.
16"x8' Lodge & Shipley, q. c., 5-step, taper att.

17"x8' Hamilton, 5-step, c. r., p. c. f., 1 1/2" h. s.
18"x8' Perkins.
20"x12' Fifield.
26"x12' Putnam, d. b. g., c. r., (2).
30"x10' Gleason, plain rest, power cross feed.
38"x20' New Haven.
56"x24' Wood Light.

MILLING MACHINES.

No. 3 Fox plain, power feed.
Rivett swivel miller.
No. 3 Van Norman duplex.
No. 12 Brown & Sharpe manufacturing miller.
Grant manufacturing.

No. 3 Pratt & Whitney, Lincoln miller.
No. 2 Brown & Sharpe vertical, 30" circular att., power feed.
No. 3 LeBlond plain, all power fds., geared feed box.

SCREW MACHINES.

1 1/2" No. 54 National Acme auto.
30x7 Fay & Scott, turret.
24" Gisholt, turret.
4 1/2" style "A" Cleveland auto., (2).
2" Cleveland automatics, (32).
3x36 Jones & L. flat turret, sliding hd., bar equip., die head and tools.
4-sp. National Acme automatic, with stock stand.
No. 5A Potter & Johnston auto. chucking machine.

24" Davis turret chucking lathes, set-over turret, friction grd. head, p. f., 4" belt, 2 1-16" h. s.
No. 1 W. & S. hex. tur. lathes, fric. b. g. hd., auto. chuck and roller fd.
1" Rivett, wire feed.
1" Pratt & Whitney.
1" National Acme automatic.
1 1/2" Rivett, plain turret.
No. 1 Brown & Sharpe, hand feed, (3).

GEAR CUTTERS.

26x10 Cincinnati.

No. 2 Whiton.

MISCELLANEOUS.

Brake, 4' Ohl, double cam.
Broaching machine, No. 2 Lapointe.
Cutting-off machine, 6" Hurlbut & Rogers.

Keyseater, No. 1 Davis.
Pinion cutter, No. 1 Slate.
Planer, 24"x24"x6" Flather, 1 head.
Wire straightener, No. 1 Shuster.

Henry Prentiss & Company, Inc.

Singer Building, New York

Formerly Prentiss Tool & Supply Company

First Class Used Machinery

IMMEDIATE DELIVERY

- 60"x60"x30' Four Head Spur Grd., Wm. B. Bement Planer.
- 12"x66" Landis Grinder with Universal Headstock.
- No. 3—26" Brown & Sharpe Automatic Gear Cutter.
- 22"x10' Lodge & Shipley Patent Head Lathe with Power Feed Turret.
- 22"x10' (36" raised swing) Lodge & Shipley Patent Head Lathe with Power Feed Turret.
- 22"x10' (30" raised swing) Lodge & Shipley Patent Head Lathe with Power Feed Turret.
- 27"x10' (40" raised swing) Lodge & Shipley Patent Head Lathe with Power Feed Turret.
- 15 H. P. Monitor Planer Control without Motor, 110 volt, D. C., First Class Condition.

The Lodge & Shipley Mch. Tool Co.
Cincinnati, Ohio, U. S. A.

Second-Hand Wood-Working Machinery

For a large list of used wood-working machinery, consult the **Wood-Working Machinery List**, a publication similar to this but devoted to the advertising of saw-mill and wood-working machines. A copy may be had on application to the publisher, **A. H. Hitchcock, 1220-1235 Caxton Building, Chicago, Ill.**

The Machinery Exposition of America!!!

250 Ton Mesta Steam Hydraulic Quick Acting Forging Press, Single Frame Type, Good As New, *Immediate Delivery*, full particulars on application.

We have every MAKE, SIZE and DESCRIPTION of Machine Tools and Metal Working Machinery.

Over 500 MACHINES on hand for IMMEDIATE DELIVERY

The following are merely selections at random:—

- 14' Standard Vertical Boring Mill, two swivel heads.
- 84" Sellers Vertical Boring Mill, two swivel heads.
- 52" Bridgeport Bullard Vertical Boring mill, two swivel heads.
- 36" Niles Vertical Boring Mill, two swivel heads.
- 36" Baush Vertical Boring Mill, two swivel heads.
- 5" Barrett Horizontal Cylinder Boring Machine, almost new.
- 3" Rochester Horizontal Boring Mill, belt driven.
- 10' Bement & Sons Boiler Plate Rolls.
- Two (2) 16"x8' Reed Prentice Engine Lathes.
- 30"x12' Israel Johnson Engine Lathe, triple grd., face plate dr.
- 30"x24' Lodge & Shipley Engine Lathe, quick change gear, etc.
- 32"x17' Pond Engine Lathe, triple geared, face plate drive.
- 38"x14' Fay & Scott Engine Lathe, heavy, good as new.
- 48"x20' Fifield Engine Lathe.
- 50"x20' Pond Engine Lathe, triple geared, face plate drive.
- 52"x22' Wood Light Engine Lathe, geared, face plate dr., hvy.
- 10" New Haven Slotter, circular table.
- 30" Bullard Draw Cut Slotter.
- 48"x36"x16' Detrick & Harvey Open Side Planer, three heads.
- 28" Hendey Shaper.
- 3' Gang Radial Drill.
- 6' Baush Radial Drill.
- 6' Bickford Radial Drill, tapping attachment.

Write For Catalogue

Graves Machinery Exchange

**Warehouses and R. R. Siding:
Johnson Ave. & Monitor St.,
Jersey City, N. J.**

**Offices: Suite 482
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Phone: Cortlandt 665**

THE MOTTCH & MERRYWEATHER MACHINERY CO

707-715 Lakeside Ave., N. W., Cleveland, Ohio

BRANCHES: DETROIT, CINCINNATI, PITTSBURGH

Offer the Following Desirable Tools

DRILLS.

1 No. 12 Leland-Gifford.

1 12" Axon.

4 24" Reed-Prentice.

5 No. 310 Baker.

MILLING MACHINES.

No. 4-B Becker Vertical Type "A" Briggs.

No. 2 Cincinnati Plain Cone Type.

No. 3 Cincinnati Plain Standard Hi-Power Type.

- 1 No. 12 Leland-Gifford.
- 4 24" Reed-Prentice.
- 5 No. 310 Baker.
- 1 No. 4-B Becker Vertical Type "A" Briggs.
- No. 3 Cincinnati Plain Standard Hi-Power Type.
- No. 3 Cincinnati Plain Standard Hi-Power Type.
- 8" Pratt & Whitney Automatic.
- 10" Pratt & Whitney Automatic.
- No. 6 Whitney Hand Miller.

GRINDERS.

- 5 Blanchard Vertical Surface, Direct Motor Driven, 440 Volt current.
- 6 No. 6 Bryant Internal.
- 6 No. 18 Bryant Internal.
- 1 No. 20 Bryant Internal.
- 1 No. 1½ Cincinnati Cutter and Tool
- 6 No. 60 Heald Cylinder.
- 6 No. 70 Heald Internal.
- 8 Garrigus, 10" Magnetic Chucks.
- 1 14x36 Norton Plain.
- 8 No. 205 Rivett Hand Oscillating.

LATHES.

- 6 8"x60" Lo-Swing

MISCELLANEOUS.

- 2 Automatics, ¾" and ½" Plain Cleveland.
- 1 Chucking Machine, 1"x7" Acme Plain.
- 6 Flat Turret Lathes, 3¼x36" Acme.
- 3 Piston Ring Machines, Gridley, Plain, with Full Equipment.
- 2 Piston Ring Machines, Gridley, Eccentric, with Full Equipment.
- 2 Piston Ring Machines, No. 1½ Potter & Johnston, Eccentric, with Full Equipment.
- 1 Press, No. 18 Bliss Inclined Bench, with Benjamin Safety Operating Device.

Exceptional Bargains In Used Machine Tools

- 5—No. 4 and 14 No. 6 Warner & Swasey Turret Lathes, complete with g. f. h. oil pump and w. f. pwr. fd. to turret. Practically new.
- 3—1½" Landis Bolt Cutters all standard equipment (2 are complete with lead screws.) Practically new.
- 1—Each Nos. 68-N & 69-N Bliss Cam Drawing Press, standard dimensions.
- 1—1 B Bliss Double Acting Cam Drawing Press.
- 1—No. 0 Brown & Sharpe Automatic Screw Machine.
- 3—4" Gridley 4 Spindle Automatics, as good as new.
- 1—Each Nos. 53, 54, 55 & 56 National Acme 4 spindle.
- 5—2½" Gridley Automatics 4 spindle.
- 1—No. 4—4½" Brown & Sharpe Automatic Gear Cutter.
- 1—4 Fosdick Radial Drill, round column, gear speed box drive.
- 1—4 Mueller Radial Drill gear speed box drive.
- 1—Each Nos. 3 & 4 Cincinnati Plain Milling Machine, back geared, quick change feed gears.
- 1—No. 3 Kempnath Plain Miller.
- 1—Hamilton Planer 30x30x16 2 heads on cross rail.
- 1—Stephens Shaper 24"
- 1—16" Gould & Eberhardt Shaper with vise.
- 1—16" Smith & Mills Shaper with vise.
- 1—16" Milwaukee Shaper with vise.
- 1—14" Stephens Shaper with vise.

M. J. Walsh Mchy. Co., 141 Sycamore St., Milwaukee, Wis.

Grand Rapids Specials

Air compressors, 4½x5 Ingersoll-Rand, (2).
 Boring mills, vertical, 34"
 Drill, 26" Sibley, sliding head.
 Drill, 28" Hamilton, sliding hd.
 Drill, No. 2 Quint 6-sp. turret.
 Elect. tool post grinder, No. 2 Willey, 110 v., 60 c., 3 p.
 Gear cutter, 36" G. & E., spur.
 Grinder, Greenfield, cutter.
 Groover, No. 518 P. S. & W., pwr.
 Hack saw, No. 1 Racine.
 Hack saw, No. 8 Marvel.
 Hammer, 50 lb. Little Giant, pwr.
 Hammer, Smith auto., power.
 Lathe, 16x8 Bogart standard.
 Lathe, 18x8 Greaves-K. standard.
 Lathe 18x10 Cincinnati standard.
 Miller, No. 38 Chicago, hand.
 Miller, No. 3 heavy, plain.
 Millers, No. 1-C Fox plain, (2).
 Miller, No. 25 Bilton plain.

Miller, No. 1½ Valley City plain.
 Molding mch., portable, Arcade.
 Presses, No. 2 Consolidated inclinable, (2).
 Press, No. 3 Consolidated incl.
 Press, No. 10 Excelsior, foot.
 Punch press, No. P-3 Ferracut.
 Rolls, drawing & forming, Port Huron.
 Riveter, No. 0 Cleveland electric.
 Rolla, power forming, No. 400 P. S. & W.
 Roll fd. for D-3 Ferracut press.
 Screw mch., 4" American, hand.
 Setting-down machine, No. 564 P. S. & W., power.
 Shear, No. 16-P Len., throatless.
 Shear, cir., No. 275 P. S. & W.
 Turret lathe, 18" Prentice, gd. hd.
 Wall radial, No. 51 Canedy-Otto.
 Welder, spot, No. 140 Toledo.
 Welding outfit, acetylene.

Ask for Complete List

McMullen Machinery Company

"Everything in Shop Equipment"

Grand Rapids, Mich.

Look Over This Exceptional List First Class Machine Tools

Immediate Delivery

1-34"x34"x16' Cincinnati Planer, double head.....	\$3000.
1-24"x24"x 6' Gray Planer, single head.....	1000.
1-30"x30"x 8' Powell Planer, single head.....	1350.
1-33"x33"x10' Knecht (Bickett) Planer, 4 heads.....	3000.
1-30"x30"x12' McFarland Planer, single head.....	1000.
1-36"x36"x24' Pond Planer, double head.....	3500.
1-37' American Vertical Boring Mills, 2 heads.....	2500.
1-Lucas Horizontal Boring Mill, 2½" bar, s. p. drive.....	2500.
1-No. 3 Long & Allstatter Heavy Geared Punch, 21" throat, 1200.	
1-No. 57 Sellers Heavy Grd. Punch, 34" throat, 1¼"x1¼", 1500.	
1-Wals & Roos Combination Angle and Splitting Shear, 900.	
1-Heavy Beveling Shear, capacity ¾" plate, 350.	
1-Set 84" Bending Rolls, capacity ¾" plate, 1200.	
1-350 ton Niles Hydraulic Wheel Press, 84" capacity, 2000.	

RADIAL DRILLS.

- 1-2½" Fostick, cone drive.
- 1-3" Drees plain, g. b. drive.
- 1-Heavy duty Baker drill, g. b. drive, Style 2 M.

AUTO. TURRET LATHES.

- 1-3" P. & W., geared head.
- 6-2x24 J. & L., geared heads.
- 1-3x36 J. & L., geared heads.
- 1-2"x24 Pratt & Whitney, grd. hds.
- 1-2" Cleveland automatic, 5 hole.
- 1-24" Cleveland auto., Model A.
- 1-14" W. & S. Turret.

MILLING MACHINES.

- 1-No. 14 Cincinnati universal.
- 1-No. 2 Cincinnati universal.
- 2-No. 4 Cincinnati plain.
- 1-No. 2 Cincinnati plain, 3 step.
- 1-No. 2 LeBlond plain, cone drive.
- 1-No. 1 B Milwaukee, s. p. drive.
- 1-No. 2 B Milwaukee, s. p. drive.
- 1-No. 2 A Milwaukee, s. p. drive.
- 1-No. 2 Becker, cone drive.
- 1-No. 3 B. & S. plain, s. p. drive.
- 2-No. 4 Cincinnati vert., s. p. drive.
- 1-No. 2 B hvy. pl. B. & S., s. p. dr.
- 2-No. 1 Y Brown & Sharpe.
- 1-No. 3 B. & S. vertical, s. p. drive.

ENGINE LATHES.

- 1-12"x8" Reed.
- 1-17"x8" Pratt & Whitney, semi q. c.
- 1-14"x8" Pratt & Whitney.
- 1-14"x8" Lodge & S. patent head.
- 1-14"x8" LeBlond, quick change.
- 1-18"x8" LeBlond standard.
- 1-20"x8" L. & S., qck. ch. tap. att.
- 1-20"x10" American, d. b. g. tap. att.
- 1-36"x12" Bradford standard.

SHAPERS.

- 1-16" Smith & Mills, b. g. crank.
- 1-20" Stockbridge, b. g. crank.
- 1-20" American, b. g. crank.

BROACHING MACHINES.

- 3-No. 3 A Lapointe.

GEAR CUTTERS AND HOBBS.

- 1-No. 448" Brown & Sharpe auto.
- 1-No. 13 B. & S. spur and bevel.
- 2-No. 6 Lees Bradner auto.
- 1-No. 4 36" Cincinnati auto.
- 1-36" Fellows Gear Shaper.
- 1-24" Schuchardt & Schutte.
- 3-Ingle Tooth Rounders.

GRINDERS.

- 3-No. 70 Heald, internal.
- 1-No. 60 Heald, internal.
- 1-No. 24 Bath, universal.
- 1-10"x50" Norton, plain.
- 4-10"x30" Landis, plain.
- 2-6"x48" Pratt & Whitney, plain.
- 1-12"x32" Landis, plain.
- 1-12"x24" Modern grinder.
- 1-10"x24" Landis, plain.
- 2-6"x32" Norton, plain.
- 1-3" P. & W. vertical surface grinder with magnetic chuck.

AIR COMPRESSORS.

- 1-13"x8"x12" Curtis vert. dbl cyl.
- 1-14"x9"x8" Herron & Burry horizontal double cylinder.

MULTIPLE DRILLS.

- 1-4 Spindle Barnes, 22" b. g. & p. f.
- 1-4 Spindle Barnes sensitive.
- 1-3 Spindle sen., Taylor & Fenn.
- 1-No. 4 32-spindle Fox.
- 1-2 Spindle Allen sensitive.
- 1-5 Spindle Detroit sen. horizontal.

WRITE-WIRE-PHONE

Broadway Machinery Company
236-238 Broadway Cincinnati, Ohio

Investigate Our Stock of Used Equipment

It is up-to-date, a little better than the average, and prices are right. Here are a few

Suggestions

Lathes

LeBlond 25"x10', heavy duty.
Perkins 28"x22", taper att.
Blount 13"x5' speed.

Shapers

Fitchburg 14" traverse head.
Juengst 15", crank.
Boynton & Plummer 9", crank.

Milling Machines

Brown & Sharpe No. 7 plain.
Garvin No. 11 plain.
Brainerd No. 8 Plain.

Screw Machines

Brown & Sharpe No. 0-G, $\frac{1}{2}$ x2".
Brown & Sharpe No. 4 hand.
Southworth No. 2-hand, 1" cap.

LYND-FARQUHAR COMPANY

"Machine-Tool Values"

Boston, Massachusetts

New Boston Show Rooms

W. H. J. Fitzgerald & Co.

30 Oliver St., Boston

- 1 Foote-Burt Company No. 23 Heavy Duty Drill, 20" swing, single belt drive, capacity $\frac{3}{8}$ " to $1\frac{1}{4}$ ", guaranteed good as new.
- 2 No. 2 Warner & Swasey Turret Screw Machines, plain head, automatic chuck, bar feed, hand longitudinal feed to cut-off, with power feed to hexagon turret.
- 2 No. 1 Warner & Swasey Turret Screw Machines, plain head, automatic chuck, bar feed, lever feed to cut-off only, automatic chuck capacity $\frac{3}{8}$ ".

These machines are in A-1 condition.

Six $\frac{1}{4}$ Inch Automatic Screw Machines (Stahl Patent)

Each fitted with screw slotting attachment. Manufactured by Hartford Machine Screw Company. These machines adapted to the rapid production of all kinds of small screws, bushings, studs, etc. Condition, good as new.

Contract Work Wanted

This department is exclusively for the use of those desiring to secure contracts for anything in the line of foundry or machine work, including press work, dies, jigs, fixtures, gears, die castings, drop forgings, screw machine products, springs, bolts, nuts, rivets, etc. Advertisements are to be set with side headings as shown, and with such display as may be appropriate to the copy used. Rates: one-eighth page, per month, \$4.

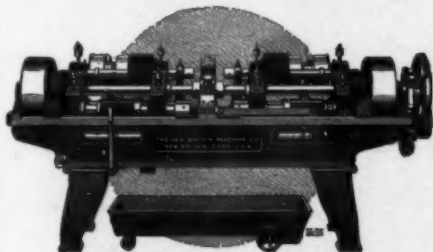
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Dies Gauges Fixtures Special Machines	The Steber Machine Co. Established 1891 Utica, N. Y. Incorporated 1906 We have made a specialty of accurate work for the past 27 years.
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In the Chucking of Castings and Forgings
And Second-Operation Screw Machine Work



Automatic Chucking Machine—Double-Head Type

The "New Britain" Double-Head Automatic performs three simultaneous operations at each end of the work.

While we claim that it usually multiplies production from 300 to 500 per cent over ordinary methods, yet some users have increased their output *eight to ten times* for the labor employed.

All operations are *automatic, simultaneous and continuous*. An extra work-holding chuck provides for loading and unloading without interfering with the machining operations. No lost motion—no idle tools.

The Single-Head Automatic is furnished to perform up to either four or five simultaneous operations on work requiring machining on one end only. It multiplies the output from three to five times and greatly reduces cost.

Proof:—Let us submit guaranteed production estimate from your samples or blue prints

The New Britain Machine Company

Automatic
Screw and Chucking
Machines



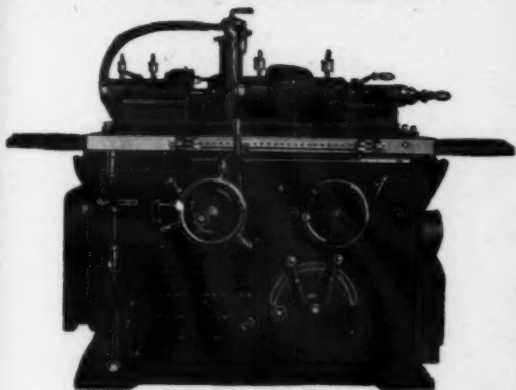
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"Modern" Plain Grinding Machines

Have a Rigid Self-Contained Drive



The type of drive provided for MODERN Plain Self-Contained Grinding Machines assures rigidity and smooth, precision grinding.

The concentration of all levers and hand wheels at the front of the machine assures quick, easy operation.

The main drive shaft runs at a constant speed; power is applied from line shaft to tight and loose pulley, or motor drive is optional.

All revolving pulleys, gears and shafts are completely guarded.

Economy of floor space, compactness and comparative simplicity of mechanism are notable points in MODERN construction.

Modern Tool Company

Main Office and Works, 2nd and Peach Sts.

Erie, Penna.

**These legs make better and
stiffer benching at less cost**

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"New Britain" All-Steel Legs make **better benching**, independent of wall support, with provision for any desired heating pipes, shelves, bins, etc.

They make **cheaper benching**, because they may be set eight feet apart, reducing the number of legs required and the labor of installation.

The reason is that the legs are stiff and are arranged for planking in a way to make a very solid, serviceable bench, while our patent stringer feature adds the final element of rigidity.

The legs are built up of formed sections of pressed steel, electrically welded—no rivets. They are unbreakable, everlasting, light in weight, sightly and sanitary.

Write for the Bench Leg Bulletin

The New Britain Machine Company

**"Shop Furniture
Originators"**



**New Britain,
Conn. U.S.A.**

